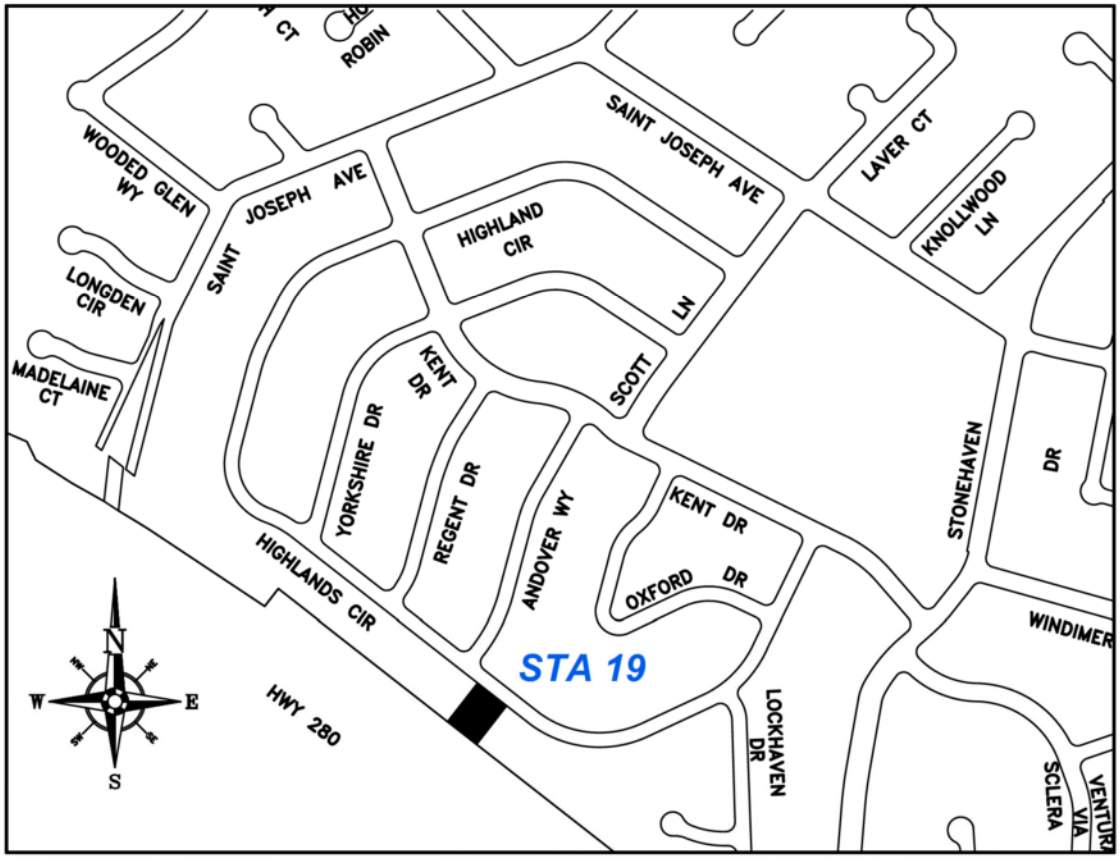
CALIFORNIA WATER SERVICE
Los Altos District 949 B Street
Los Altos, CA 94024 Tel: (650) 917-0152

Cover Sheet
California Water Service Los Altos Station 19 –Replacement of Pressure Tank
CWS Project Number - 00116033



VICINITY MAP
NOT TO SCALE

Table of Contents:

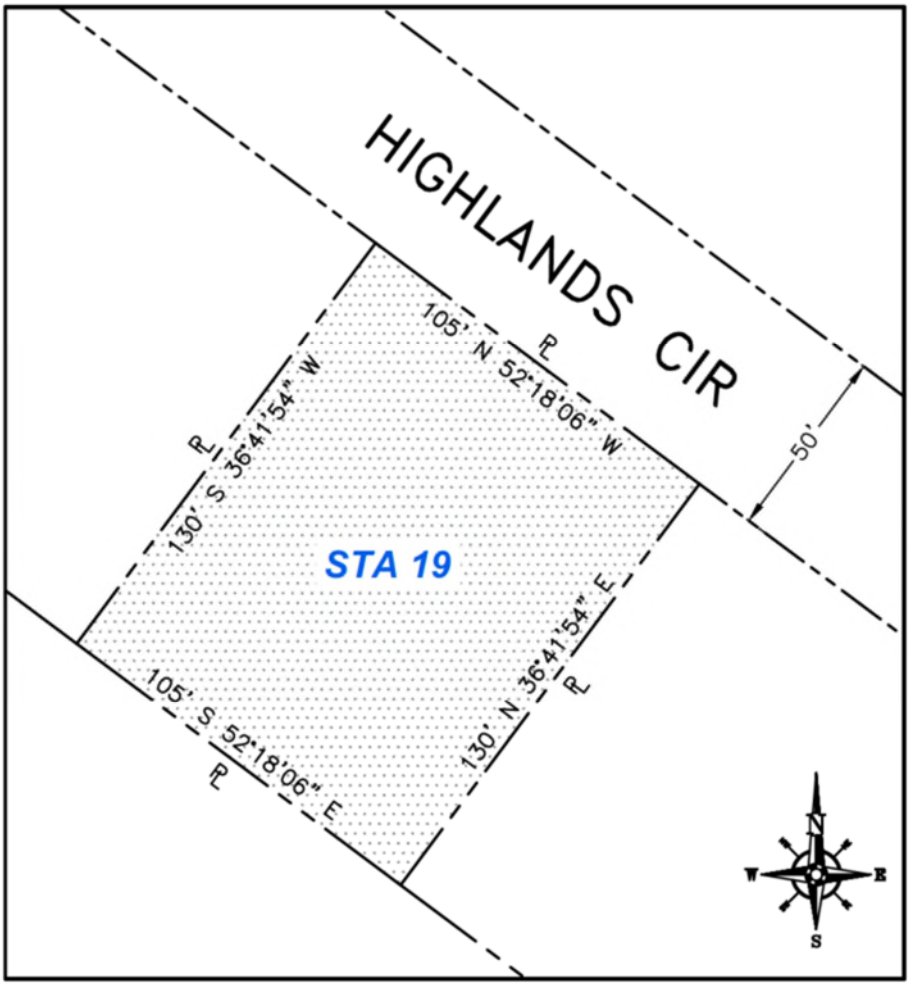
General Project Information:

Los Altos Station 19 is a potable water pump station owned and operated by California Water Service located near 885 Highlands Circle. It is zoned for R1-10, single family homes and community facilities. The station has a hydro-pneumatic tank on the discharge side of the pumps for pressure control that is at the end of its operational life. Cal Water inspects pressure vessels at five-year maximum intervals. The purpose of the inspections is to evaluate the vessels structural integrity, the condition of the appurtenances and the effectiveness of the coatings and linings. The inspection focuses on the vessels substrate and structural integrity, the interior and exterior coating condition and proper functionality of all appurtenances. The engineer evaluates measurements of the steel thickness and determines a risk level for the vessel. By maintaining pressure vessels below a designated level of risk, Cal Water maintains reliability in the distribution system.

Implementation of pressure vessel replacement projects improve the reliability of the water distribution system. Increased safety reduces the hazard exposure to workers and the community. Maintaining regulatory compliance ensures that the quality of the water and service provided by Cal Water is of high value. And upholding the structural integrity of pressure vessel infrastructure ensures reliable service can be provided, even during times of emergency.

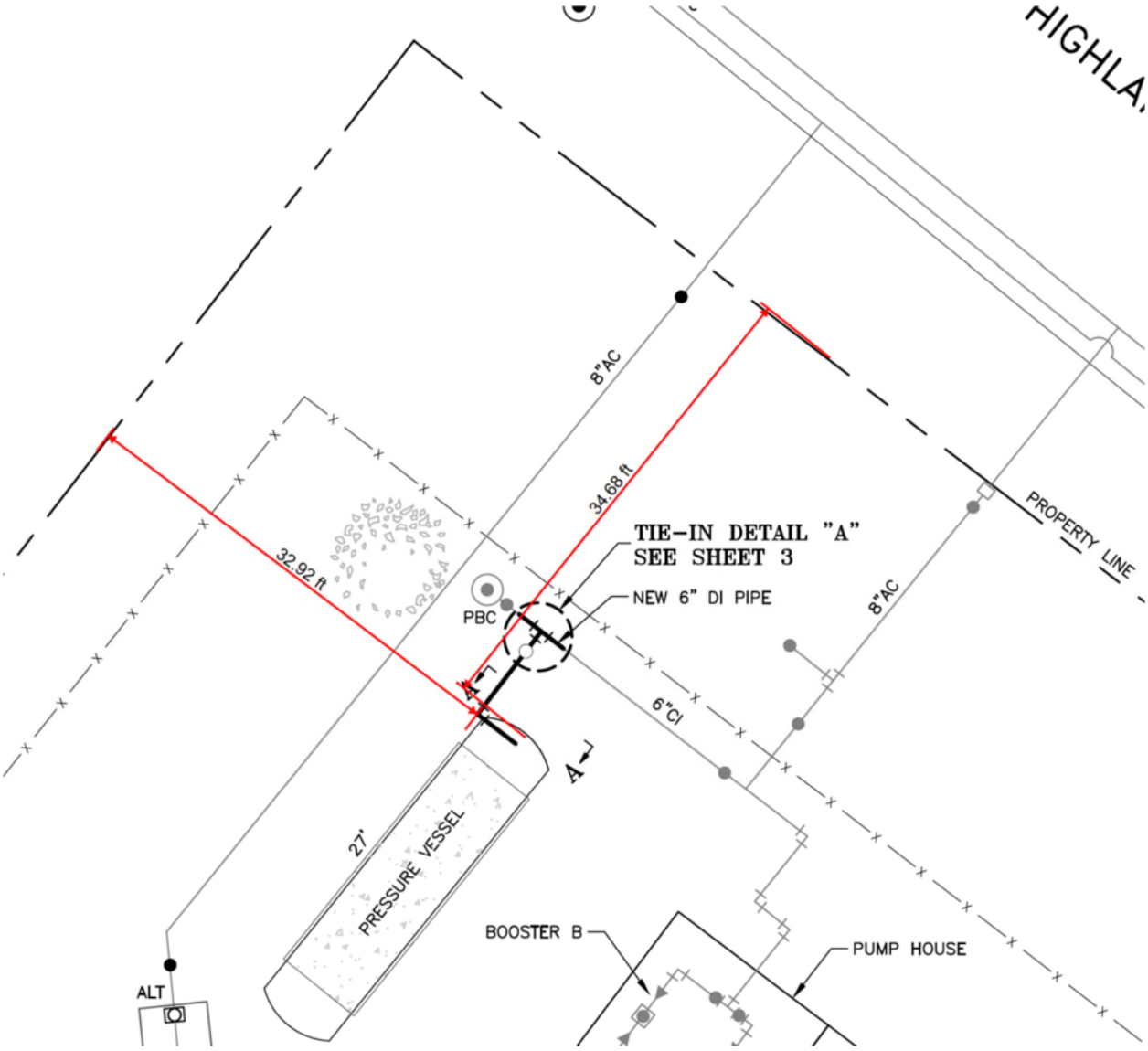
The mechanical and civil portions of this project were designed by Nathan Houk-Syau and reviewed and stamped by Devi Prasanna, PE. The structural portions of this project were designed and stamped by Alicia Garcia, PE.

Land Development Calculations:
Site Area, from Sheet 1 of 3 of LAS-3553



PROPERTY MAP

Offsets, from Sheet 2 of 3 of LAS-3553



There is no change to impervious cover. The existing concrete foundation pad is being replaced in kind and there is no other impervious cover being constructed.

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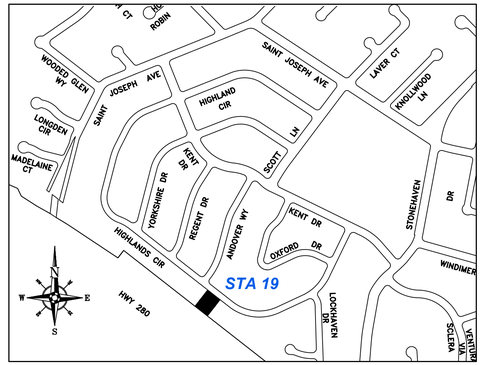
View of Station 19 from Highlands Circle

CALIFORNIA WATER SERVICE

LOS ALTOS – STATION 19
REPLACEMENT OF PRESSURE TANK
LOS ALTOS, CALIFORNIA



VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

1. CONTRACTOR SHALL BECOME FAMILIAR WITH PROJECT SURROUNDINGS, WORKING CONDITIONS, AND SITE LIMITATIONS AND WILL INCLUDE ALLOWANCES IN THEIR BID TO COVER ANY PROJECT CONSTRAINTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO AND COMPLYING WITH LOCAL GOVERNING AGENCY PERMIT RESTRICTIONS, WHICH MAY AFFECT ALLOWABLE WORKING HOURS AND NOISE LEVELS.
3. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY APPLICABLE LOCAL GOVERNING AGENCY. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN PER CALTRANS STANDARDS TO OWNER PRIOR TO CONSTRUCTION, IF REQUIRED. WORK REQUIRING TRAFFIC CONTROL SHALL BE CONDUCTED BETWEEN THE HOURS OF 9:00 A.M. AND 3:30 P.M., MONDAY THRU FRIDAY, OR AS OTHERWISE AUTHORIZED BY LOCAL GOVERNING AGENCY REPRESENTATIVE.
4. CONTRACTOR SHALL APPLY CALIFORNIA STORMWATER QUALITY ASSOCIATION (CASQA) BEST MANAGEMENT PRACTICES TO PREVENT WATER AND SEDIMENT FROM ENTERING NAVIGABLE WATERWAYS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND INSTALLING THE APPLICABLE AND APPROPRIATE BMPs IDENTIFIED IN THE CASQA – STORMWATER BEST MANAGEMENT PRACTICES HANDBOOK AVAILABLE ONLINE AT WWW.CABMPHANDBOOKS.COM. SOME OF THE REQUIRED PRACTICES MAY OR MAY NOT BE SHOWN ON THIS SITE PLAN.
5. CONTRACTOR TO CONTACT "UNDERGROUND SERVICE ALERT" 48 HOURS PRIOR TO ANY EXCAVATION.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES.
7. TRENCH TO BE SHORED IN ACCORDANCE WITH CALIFORNIA OSHA REGULATIONS.
8. PLACE A CONTINUOUS WIRE AND STRIP OF DETECTOR TAPE OVER ALL PIPES AND EXTEND UP INTO ALL VALVE BOXES. TRACER WIRE IS REQUIRED ON ALL PIPE. (SEE LATEST REVISION OF DRAWING CW–850).
9. SEE LATEST REVISION OF DRAWING CW–435 FOR TYPICAL THRUST BLOCK INSTALLATION.
10. FACILITIES SEPARATION:
    - A) WATER MAIN SHALL BE INSTALLED AT LEAST 10 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING SEWAGE (UNTREATED, PRIMARY, OR SECONDARY), DISINFECTED SECONDARY RECYCLED WATER, OR HAZARDOUS FLUIDS.
    - B) WATER MAIN SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PIPELINE CONVEYING TERTIARY RECYCLED WATER OR STORM DRAINAGE.
    - C) AT CROSSINGS, WATER MAIN SHALL BE CONSTRUCTED NO LESS THAN 45–DEGREES TO AND AT LEAST ONE FOOT VERTICALLY ABOVE ANY PIPELINES INDICATED IN A AND B ABOVE.
    - D) NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT (8) HORIZONTAL FEET OF CROSSING ANY PIPELINES INDICATED IN A AND B ABOVE.
    - E) WATER MAIN SHALL NOT BE INSTALLED WITHIN 100 HORIZONTAL FEET OF ANY SANITARY LANDFILL, WASTEWATER DISPOSAL POND, OR HAZARDOUS WASTE DISPOSAL SITE.
    - F) WATER MAIN SHALL NOT BE INSTALLED WITHIN 25 HORIZONTAL FEET OF ANY CESSPOOL, SEPTIC TANK, SEWAGE LEACH FIELD, SEEPAGE PIT, UNDERGROUND HAZARDOUS MATERIAL STORAGE TANK, OR GROUNDWATER RECHARGE PROJECT SITE.
11. WHEN ASSEMBLING A PVC C–900 PIPE TO AN IRON FITTING (PUSH–ON OR MECHANICAL JOINT), REMOVE ALL BUT 1/4 INCH OF THE FACTORY–MADE BEVEL FROM THE SPIGOT END OF THE PIPE PRIOR TO INSTALLATION.
12. VALVE CANS AND COVERS SHALL BE PLACED OVER ALL VALVES. COVERS SHALL BE SET TO EXISTING FINISHED GRADE AND RESET IF NECESSARY ONCE THE STREET IS AT FINAL GRADE. (SEE LATEST REVISION OF DRAWINGS CW–14 AND CW–439).
13. NO VALVE COVERS ARE TO LIE IN SIDEWALKS, CROSS GUTTER, CURB OR DRIVEWAYS. EACH SERVICE SHOULD ALSO BE LOCATED TO PROVIDE PROTECTION TO THE METER BOX FROM VEHICLE TRAFFIC AND PARKING.
14. PROTECT UNDERGROUND FLEXIBLE COUPLINGS, BARE STEEL, MJ x MJ SLEEVES, AND ALL BOLTS (INCLUDING STAINLESS STEEL) AS FOLLOWS:
    - A) THE ENTIRE AREA OF THE FITTING MUST BE DRY AND FREE OF DUST, DIRT, AND OTHER FOREIGN MATTER. RUST OR OTHER FOREIGN MATTER MUST BE REMOVED BY SCRAPING OR WIRE BRUSHING. WIPING WITH A DRY CLEAN CLOTH MAY BE NECESSARY TO REMOVE THE PARTICLES FROM BRUSH CLEANING. ANY OIL OR GREASE MUST BE REMOVED BY USING A LOW RESIDUE, VOLATILE PETROLEUM SOLVENT BEFORE APPLICATION OF GREASE AND WRAPPING.
    - B) THE EXPOSED AREA SHOULD BE COATED WITH A HEAVY COATING OF METALGUARD 301 GREASE BY THE GLOVE METHOD TO A THICKNESS OF AT LEAST 1/4".
    - C) FIRMLY WRAP THE ENTIRE GREASE AREA WITH ONE LAYER, HALF–LAPPED, OF A WOVEN GLASS FILAMENT MESH (RES OR BIT WRAP, 4" WIDE).
    - D) APPLY A SECOND LAYER OF METALGUARD 301 GREASE ON TOP OF THE GLASS FILAMENT BY THE GLOVE METHOD TO A THICKNESS OF AT LEAST 1/4".
    - E) FIRMLY WRAP THE ENTIRE GREASE AREA WITH A SECOND LAYER, HALF–LAPPED, OF THE WOVEN GLASS FILAMENT MESH.
    - F) COVER THE ENTIRE MESH WRAPPED AREA OF THE FITTING WITH A THIRD AND FINAL COATING AT LEAST 1/4" THICK OF METALGUARD 301 GREASE BY THE GLOVE METHOD.
    - G) FIRMLY APPLY 2 LAYERS OF POLYWRAP, HALF–LAPPED, OVER ALL AREAS OF THE COATED AND WRAPPED FITTING. BACKFILLING MAY FOLLOW IMMEDIATELY AFTER THIS WRAPPING.
15. TRENCH BACKFILL AND PAVING SHALL CONFORM TO TRENCH SECTION DETAILS AND ALL GOVERNING AGENCY REQUIREMENTS.
16. NEW PIPELINE SHALL BE INSTALLED WITH 4 FEET OF COVER, EXCEPT WHERE SPECIFIED.
17. CONTRACTOR SHALL LIMIT DAILY TRENCHING OPERATIONS TO THE LENGTH OF PIPE THAT CAN BE INSTALLED AND BACKFILLED THAT DAY.
18. CONTRACTOR SHALL INSTALL NEW MAIN AND ADJUST FROM NOMINAL LINE AND GRADE TO MATCH THE EXISTING FACILITIES AT ALL LOCATIONS. THE CONTRACTOR SHALL INSTALL A TEMPORARY CAP AND BLOW–OFF AT TIE–IN LOCATIONS FOR TESTING, (SEE LATEST REVISION OF DRAWINGS CW–122 & CW–638). CONTRACTOR WILL TIE THE NEW MAIN FROM THIS LOCATION.
19. THE NEW PIPELINE SHALL BE TESTED AT 150 PSI FOR A PERIOD OF 4 HOURS. SEE SPECIFICATIONS TO DETERMINE EXACT TESTING REQUIREMENTS.
20. TIE–INS TO BE MADE AT A TIME THAT IS CONVENIENT TO OWNER WHICH MAY BE AT NIGHTS OR WEEKENDS. THE ADDITIONAL COST DUE TO OVERTIME PAY SHALL BE AT OWNER'S EXPENSE.
21. CONTRACTOR SHALL PROVIDE MISC. MATERIAL REQUIRED TO COMPLETE THE TIE–IN SUCH AS, BUT NOT LIMITED TO: PROTECTION COATING MATERIAL FOR PIPE AND FITTINGS, LINEGUARD TAPE, CONCRETE FOR THRUST BLOCKS, EMBEDMENT BACKFILL AROUND AND OVER THE PIPE, FINAL BACKFILL TO MEET COMPACTION REQUIREMENTS, AND PAVEMENT REPLACEMENT.
22. CONTRACTOR SHALL BE RESPONSIBLE TO ABANDON ALL PIPE ENDS BY PLUGGING WITH BRICK AND MORTAR. ABANDON ALL GATE VALVES BY REMOVING COVER, CUT CASING DOWN TO SUBGRADE, AND BACKFILL VALVE CASING WITH CONCRETE SLURRY TO REMOVE VOIDS. REPLACE BASE ROCK AND PERMANENT PAVEMENT AS NECESSARY. WHEN REMOVING EXISTING FITTINGS, CONTRACTOR SHALL ALSO REMOVE EXISTING CONCRETE THRUST BLOCK.
23. CONTRACTOR SHALL RESTORE LAWN, GUTTER, PAVEMENT, BERM, AND CURB TO MATCH EXISTING PER GOVERNING AGENCY'S STANDARDS.
24. SPOILS SHALL NOT REMAIN ON–SITE. DISPOSAL OF ALL PROJECT–GENERATED SPOILS SHALL BE AT A FACILITY LICENSED AND CLASSIFIED TO ACCEPT THE MATERIALS. CONTRACTOR TO PROVIDE OWNER WITH A FORMAL RECEIPT FROM THE ACCEPTING FACILITY. ALL MATERIALS THAT WILL REQUIRE TESTING PRIOR TO DISPOSAL SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE DISPOSAL FACILITY IN ADVANCE OF THE NEED FOR DISPOSAL.
25. THE LIST OF MATERIALS FOR THIS PROJECT IS FOR CWS CO. ESTIMATING AND REFERENCE PURPOSES ONLY, AND IS NOT INTENDED AS A FULL TAKE–OFF OF ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT PER CWS CO. STANDARD SPECIFICATIONS.
26. AT TIE–INS, CONTRACTOR SHALL SPRAY OR SWAB ALL FITTINGS WITH CHLORINE SOLUTION FOR DISINFECTION PRIOR TO FINAL CONNECTIONS.
27. CONTRACTOR TO ENSURE AIR IN THE PIPELINE IS REMOVED USING EXISTING OUTLETS SUCH AS FIRE HYDRANTS AND BLOW OFFS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AIR RELEASES IF EXISTING OUTLETS ARE INSUFFICIENT.
28. ALL WORK SHALL COMPLY WITH CAL WATER SPECIFICATIONS FOR MATERIALS, INSTALLATION, DISINFECTION AND DECHLORINATION PER LATEST REVISION OF DRAWING CW–863.
29. ALL SLIP–ON WELDING FLANGES SHALL BE RAISED–FACE SLIP–ON WELDING FLANGES.
30. EXISTING COMPRESSOR TO BE USED FOR NEW PRESSURE TANK.

SUMMARY OF WORK

- DEMOLISH AND REMOVE EX. PRESSURE TANK, PIPING, FOUNDATION AND DEBRIS OFFSITE
- GRADE AND SITE PREP FOR FOUNDATION
- CONSTRUCT NEW CONCRETE FOUNDATION PAD
- INSTALL 5,000 GALLON HYDRO–PNEUMATIC TANK AND ASSOCIATED PIPING
- INSTALL 6" GATE VALVE

ABBREVIATIONS TABLE:

10/14/2020

CI	=	CAST IRON
DIA	=	DIAMETER
EX	=	EXISTING
FOC	=	FACE OF CURB
GV	=	GATE VALVE
MIN	=	MINIMUM
NC	=	NORMALLY CLOSED
O.C.	=	ON CENTER
PBC	=	PORTABLE BOOSTER CONNECTION
T&B	=	TOP AND BOTTOM
CONC	=	CONCRETE

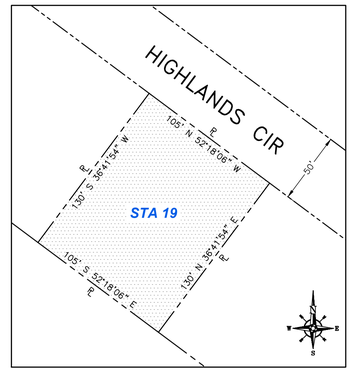
LEGEND:

- = TEE
- = ELBOW, 45°
- = ELBOW, 90°
- = BLOWOFF (PROPOSED)
- = BLOWOFF (EXISTING)
- = GATE VALVE (PROPOSED)
- = GATE VALVE (EXISTING)
- = REDUCER (PROPOSED)
- = REDUCER (EXISTING)
- = SOLID PLUG
- = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = ABANDON WATER MAIN
- = SANITARY SEWER
- = STORM DRAIN
- = FIRE HYDRANT (PROPOSED)
- = FIRE HYDRANT (EXISTING)
- = BUTTERFLY VALVE
- = CHECK VALVE
- = FLEX CPLG.
- = UTILITY POLE (EXISTING)

BILL OF MATERIALS

QTY	DESCRIPTION
20'	8" DI PIPE
1	6" 90° ELL PO, FLG 125#
1	6" TEE
1	8" x 6" REDUCER
2	6" SOLID SLEEVE MJ W/ RESTRAINT ADAPTERS
1	8" SOLID SLEEVE MJ W/ RESTRAINT ADAPTERS
1	6" 90° ELL FOE–POE
1	8" GATE VALVE, PO
1	5,000 GALLON SURGE TANK (PROVIDED BY OWNER)
1	SET OF ROD AND CLIP ASSEMBLY
AS REQ'D	RESTRAINT GASKETS FOR ALL PUSH ON FITTING
AS REQ'D	TRACER WIRE #12 AWG STRANDED COPPER
AS REQ'D	THW INSULATED LINE GUARD POLY WRAP TUBING (FOR 6" & 8" DI PIPES)
AS REQ'D	OTHER MATERIALS TO COMPLETE THE TIE–IN DETAIL "A" & "B"

REFERENCE LISTED ONLY – CONTRACTOR TO VERIFY AND OBTAIN ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT.



PROPERTY MAP
SCALE: 1" = 50'

Know what's **below.**
Call before you dig.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: E.VANDERHOPE

DESIGNED BY: N.HOUK–SYAU

TECH REVIEW: DATE: 10/14/2020

CHECKED BY: DATE: 10/14/2020

APPROVED BY: DATE: 10/14/2020

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
EXP. 06–30–22
CIVIL
STATE OF CALIFORNIA

TITLE:
LOS ALTOS – STATION 19
REPLACEMENT OF PRESSURE TANK
GENERAL NOTES

DISTRICT: LAS

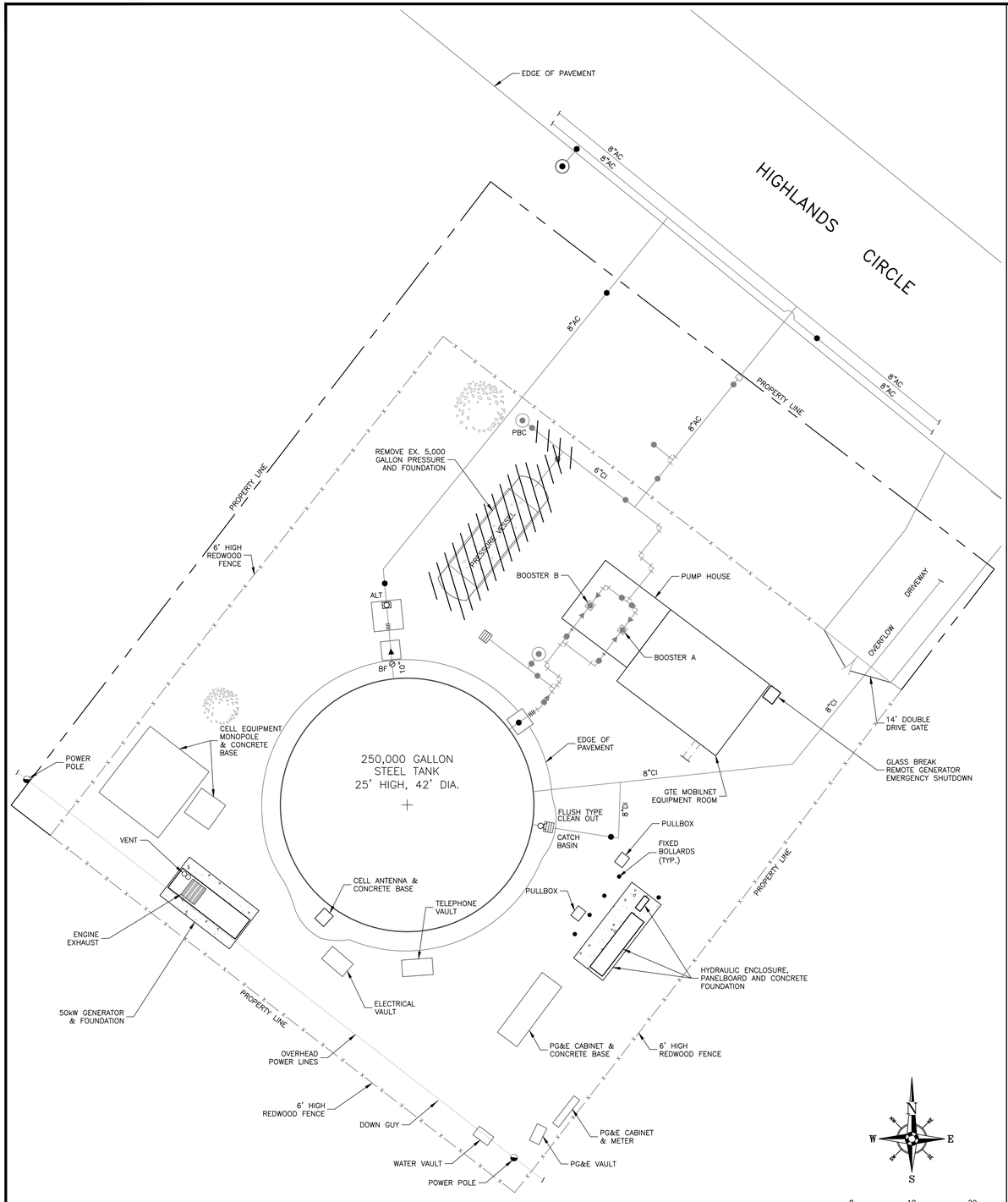
LOS ALTOS

DATE: 08/26/2020

PROJECT ID.: 00116033

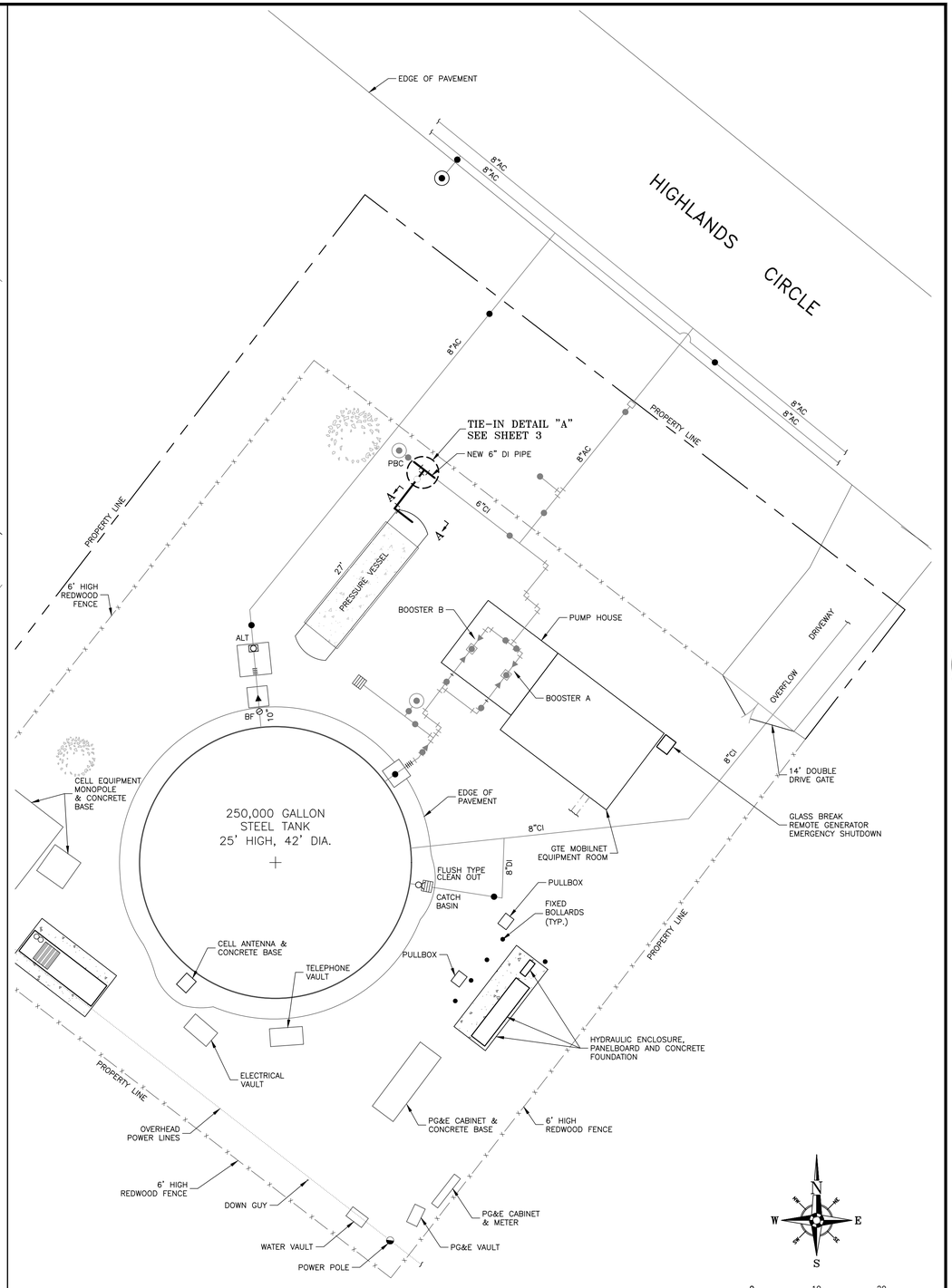
DRAWING NO.: LAS–3553

SHT 1 OF 3



EXISTING SITE PLAN & DEMO PLAN

SCALE: 1"=10'



PROPOSED SITE PLAN & PIPING PLAN

SCALE: 1"=10'

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE:
AS SHOWN

DRAWN BY:
E.VANDERHOPE

DESIGNED BY:
N.HOUK-SYAU

TECH REVIEW: DATE:
10/14/2020

CHECKED BY: DATE:
10/14/2020

APPROVED BY: DATE:
10/14/2020

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
EXP. 06-30-22
CIVIL
STATE OF CALIFORNIA

LOS ALTOS - STATION 19
REPLACEMENT OF PRESSURE TANK
DEMO AND PIPING PLAN

TITLE:

DISTRICT:
LAS

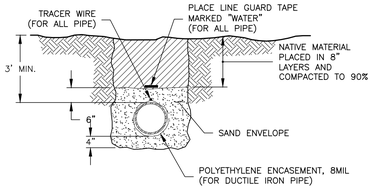
LOS ALTOS

DATE:
08/26/2020

PROJECT ID.:
00116033

DRAWING NO.:
LAS-3553

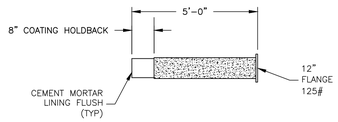
SHT 2 OF 3



ON-SITE TRENCH DETAIL "A"

CWS STANDARD DWG NO.: DD-1.3-4

NOT TO SCALE



PIECE MARKED "A"

N.T.S.

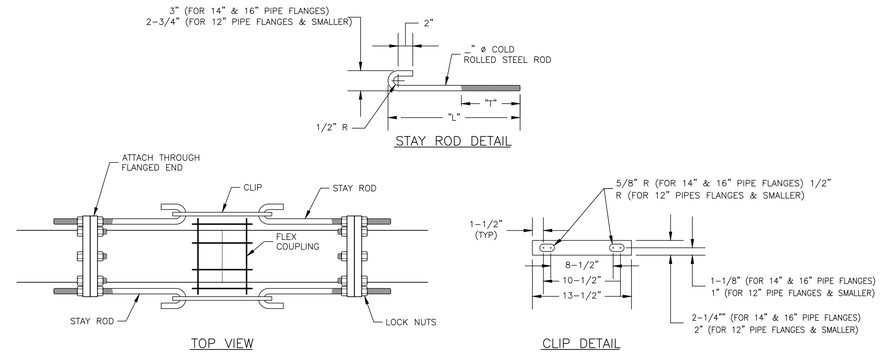
PIECE "MARKED"	QTY	PIPE STEEL CYL. (OD)	SCH.	CML	CMC
A	1	8.63"	20	3/8"	3/4"

CEMENT MORTAR LINING, CML
CEMENT MORTAR COATING, CMC

CL&C FABRICATION "B"

CWS STANDARD DWG NO.: DD-1.1-6

NOT TO SCALE



PIPE SIZE	DIA. OF ROD
6" & 8"	3/4"

INSTALLATION	DIAMETER OF ROD	NUMBER OF RODS	NUMBER OF HEAVY HEX NUTS (2 PER ROD)	"L"	"T"	NUMBER OF CLIPS
SURGE/PRESSURE TANK	7/8"	8	16	18"	8"	4

* VERIFY FOE-POE LENGTH IN THE FIELD

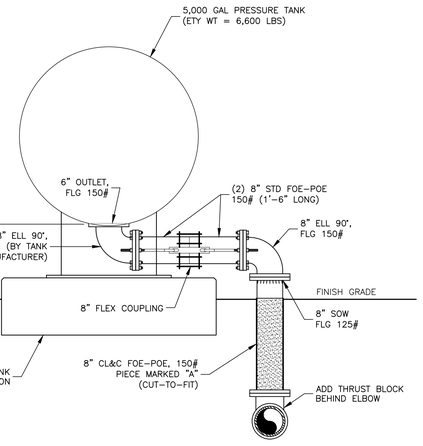
NOTES:

1. LENGTH OF "L" SHALL EQUAL THE LENGTH OF FOE-POE.
2. ROD DIAMETER SHALL BE THE SAME DIAMETER AS THE FLANGE BOLT.
3. USE 1/2" THICK BAR STOCK FOR CLIPS.

STAY ROD & CLIP DETAIL "C"

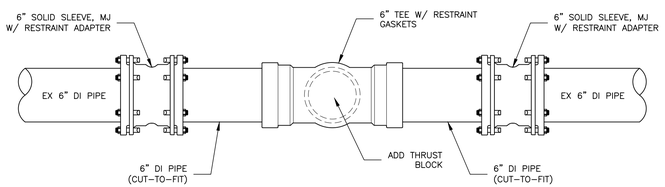
CWS STANDARD DWG NO.: DD-1.1-5

NOT TO SCALE



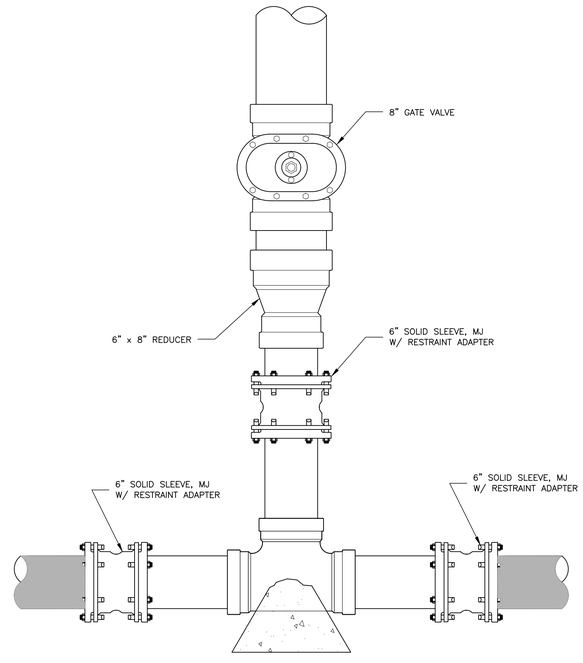
SECTION A-A

SCALE: 1" = 2'



TIE-IN DETAIL A

NOT TO SCALE



PLAN VIEW

NOT TO SCALE

DETAIL "D"

NOT TO SCALE

THRUST BLOCK SCHEDULE

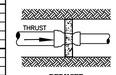
PIPE SIZE	FITTING	TYPE OF SOIL: SOFT CLAY (1000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SOFT CLAY DIMENSION (FEET) A	SOFT CLAY DIMENSION (FEET) B	SAND (2000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SAND DIMENSION (FEET) A	SAND DIMENSION (FEET) B	ROCK (3000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	ROCK DIMENSION (FEET) A	ROCK DIMENSION (FEET) B
6"	PLUG, CAP	6	3	2	3	2	1.5	2	2	1
	90° ELL	8	3.2	2.5	4.1	2.7	1.5	3	2	1.5
	45° ELL	4.4	2.2	2	2.3	1.5	1.5	1.5	1.5	1
	22 1/2° ELL	2.3	1.5	1.5	1	1	1	1	1	1
	TEE W/ 6"OUTLET	6	3	2	3	2	1.5	2	2	1
8"	PLUG, CAP	10	4	2.5	5	2.5	2	3.3	2.2	1.5
	90° ELL	14	4	3.5	7	2.8	2.5	5	2.5	2
	45° ELL	7.5	3	2.5	3.8	2	1.9	2.6	1.7	1.5
	22 1/2° ELL	4	2	2	2	2	1	1.5	1.5	1
	TEE W/8"OUTLET	10	4	2.5	5	2.5	2	3.3	2.2	1.5
12"	PLUG, CAP	24	6	4	12	4	3	7.5	3	2.5
	90° ELL	32.5	6.5	5	16.1	4.6	3.5	10.8	3.6	3
	45° ELL	17.5	5	3.5	8.8	3.5	2.5	6	3	2
	22 1/2° ELL	9	3.6	2.5	4.6	2.3	2	3	2	1.5
	TEE W/12"OUTLET	24	6	4	12	4	3	7.5	3	2.5
14"	PLUG, CAP	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
	90° ELL	44.4	7.4	6	22	5.5	4	14.7	4.2	3.5
	45° ELL	24	6	4	12	4	3	8.1	3	2.7
	22 1/2° ELL	12	4	3	6	3	2	4	2	2
	TEE W/ 14"OUTLET	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
16"	PLUG, CAP	40.7	7.4	5.5	20	5	4	13.5	4.5	3
	90° ELL	56	8	7	28.8	6.4	4.5	20	5	4
	45° ELL	31	6.2	5	15.8	4.5	3.5	10.5	3.5	3
	22 1/2° ELL	15.8	4.5	3.5	7.8	3	2.6	5.2	2.6	2
	TEE W/ 16"OUTLET	40.7	7.4	5.5	20	5	4	13.5	4.5	3
18"	PLUG, CAP	52	8	6.5	26.4	6.6	4	17.5	5	3.5
	90° ELL	75	10	7.5	37	7.4	5	24.8	6.2	4
	45° ELL	40.7	7.4	5.5	20	5	4	14	4	3.5
	22 1/2 ELL	20	5	4	10.5	3.5	3	6.9	3	2.3
	TEE W/ 18"OUTLET	52	8	6.5	26.4	6.6	4	17.5	5	3.5

NOTE:

1. THRUST BLOCKS DESIGNED FOR A MAXIMUM OF 150 PSI WATER PRESSURE
2. ALL CONCRETE SHALL CONTAIN 6 SACKS OF CEMENT PER CUBIC YARD.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
4. KEEP ALL CONCRETE CLEAR OF THE JOINTS ON ALL FITTINGS.
5. FORMS ARE REQUIRED ON ALL THRUST BLOCKS AND TO BE SUPPLIED BY CONTRACTOR. ALL FITTINGS TO BE WRAPPED WITH POLYETHELENE PRIOR TO POURING THRUST BLOCKS.

TEE & SOLID PLUG

NOTE:
SEE PLANS FOR SIZE & DETAIL OF CONCRETE BLOCK WHEN REQUIRED FOR REDUCER.



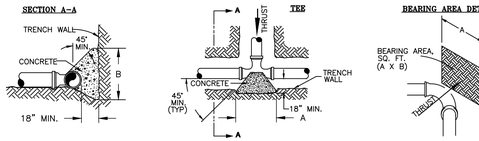
REDUCER

90° ELL

TYPICAL THRUST BLOCK INSTALLATION

CWS STANDARD DWG NO.: CW-435-R4

NOT TO SCALE



ENGINEERING

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: E.VANDERHOPE

DESIGNED BY: N.HOUK-SYAU

TECH REVIEW: DATE: 10/14/2020

CHECKED BY: DATE: 10/14/2020

APPROVED BY: DATE: 10/14/2020

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
EXP. 06-30-22
CIVIL
STATE OF CALIFORNIA

TITLE:
LOS ALTOS - STATION 19
REPLACEMENT OF PRESSURE TANK
DETAILS AND SECTIONS

DISTRICT: LAS

LOS ALTOS

DATE: 08/26/2020

PROJECT ID.: 00116033

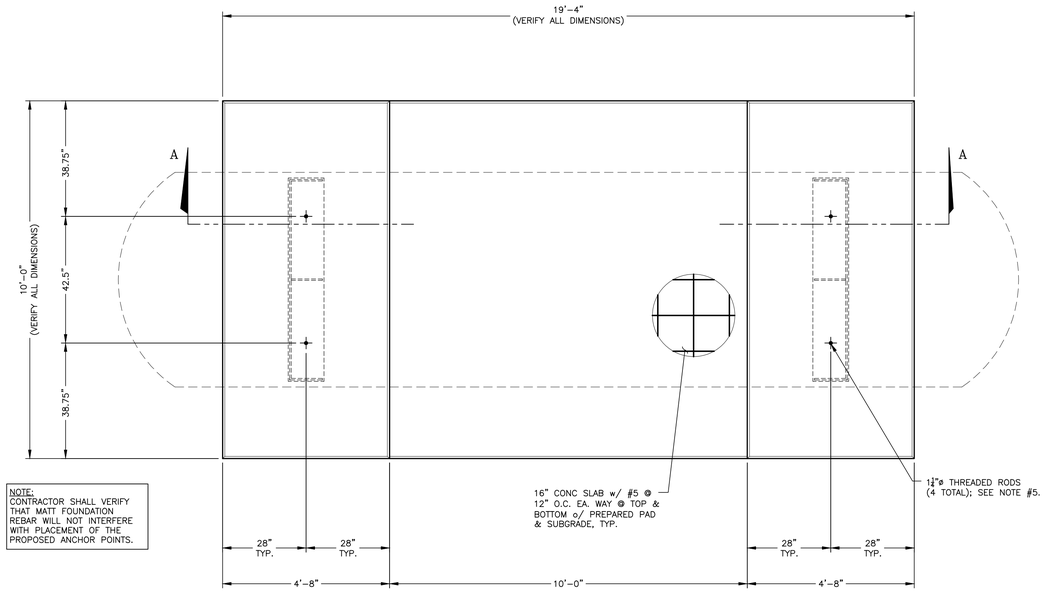
DRAWING NO.: LAS-3553

SHT 3 OF 3

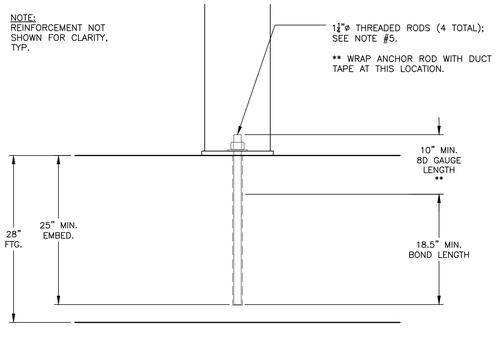
SPECIAL TESTS & INSPECTION SCHEDULE

THE FOLLOWING ITEMS SHALL BE INSPECTED. "SPECIAL INSPECTION" SHALL CONFORM TO 2019 CBC 1705. SPECIAL INSPECTION AGENCIES AND/OR INDIVIDUALS SHALL BE RETAINED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL PRIOR TO ANY WORK. FOR MATERIAL TESTING REQUIREMENTS, SEE SPECIFICATIONS AND/OR GENERAL NOTES. TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE BUILDING OFFICIAL AND ENGINEER.

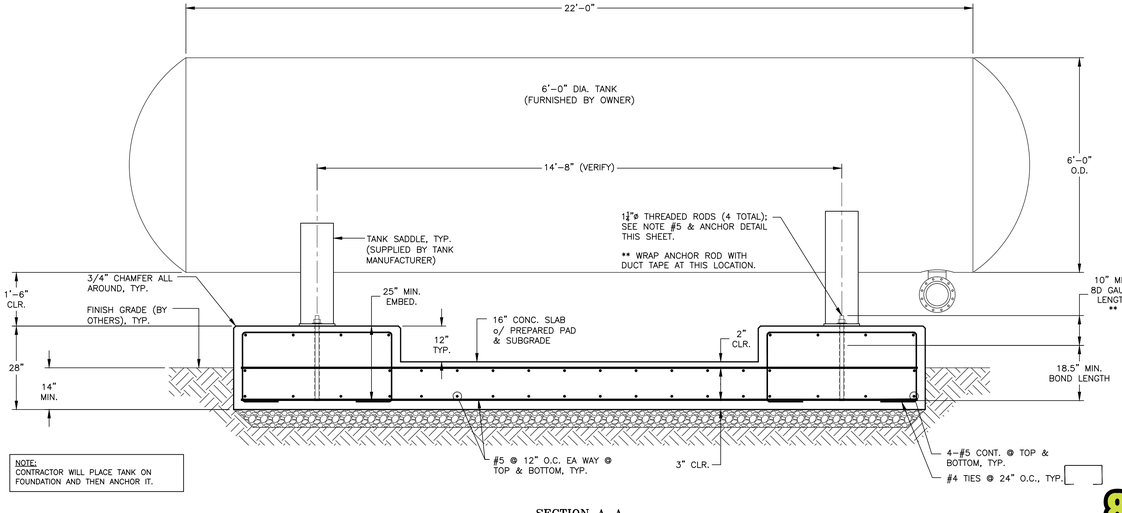
ITEM	REQUIRED	REMARKS
EPOXY (WHERE OCCURS)	YES	VISUAL-INSTALLATION PROCEDURES ONLY (PER SECTION 1705.1.1)



PLAN VIEW
1/2"= 1'-0"



ANCHOR DETAIL
1"= 1'-0"



SECTION A-A
1/2"= 1'-0"

5,000 GALLON PRESSURE TANK FOUNDATION PLAN & DETAILS

NOTES FOR FOUNDATION

1. GENERAL
ALL CONSTRUCTION NOT SPECIFICALLY DETAILED SHALL CONFORM TO THE REQUIREMENTS OF THE 2019 CALIFORNIA BUILDING CODE (CBC) AND ANY LOCAL CODE REQUIREMENTS. ALL DETAILS, SECTIONS AND NOTES SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS ELSEWHERE UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL COMPARE THIS DRAWING WITH EXISTING CONDITIONS AT THE SITE, AND WITH ALL OTHER APPLICABLE DRAWINGS. CONTRACTOR SHALL VERIFY MEASUREMENTS OF ALL EXISTING FEATURES AFFECTING HIS WORK, AND SHALL REPORT ANY DISCREPANCIES TO THE CALIFORNIA WATER SERVICE COMPANY ENGINEER FOR CLARIFICATION AND ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS SHOWN ON THIS DRAWING WITH THE REQUIREMENTS OF EXISTING CONDITIONS AND ALL RELATED NEW EQUIPMENT.

FOUNDATION PREPARATION: AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES AND MOISTURE-CONDITIONED TO A MINIMUM OF 2% ABOVE OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO A MINIMUM 90% OF THE MAXIMUM DRY DENSITY PER ASTM D1557. THERE SHALL BE A MINIMUM OF 6" CLASS 2 AGGREGATE BASE (AB) UNDER ANY PROPOSED FOUNDATION COMPACTED TO 95% MDD.

FOOTINGS SHALL BE AS DETAILED ON THE DRAWINGS. THE FOUNDATION DESIGN IS BASED UPON THE VALUES FOR CLASS 5 MATERIALS LISTED IN TABLE 1806.2 OF THE CBC. THE FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 1,500 PSF (DL+LL) PLUS ONE THIRD INCREASE FOR WIND AND SEISMIC LOADS.

THE AGGREGATE BASE, FORMS AND SUBGRADE SHALL BE THOROUGHLY WETTED BEFORE PLACEMENT OF CONCRETE.

2. CONCRETE
ALL CONCRETE SHALL DEVELOP A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS OF AGE (DESIGN BASED ON 2500 PSI-NO SPECIAL INSPECTION IS REQUIRED PER EXCEPTION 2.3 IN SECTION 1705.3 OF 2019 CBC). THE SLUMP SHALL BE THE MINIMUM CONSISTENT WITH PLACING CONDITIONS BUT SHALL NOT EXCEED 4 1/2".

PLACE CONCRETE IN ACCORDANCE WITH ACI-301. ENSURE THAT REINFORCEMENT AND EMBEDDED ITEMS ARE NOT DISTURBING PLACEMENT OF CONCRETE. TOP OF THE FLOOR SHALL BE TRUE TO INDICATED ELEVATIONS. VARIATIONS SHALL NOT EXCEED 1/8" IN 10 FEET. THE LEVEL BEARING AREA AT THE TOP OF THE FOUNDATION SHALL RECEIVE A HARD STEEL TROWEL FINISH, SMOOTH AND LEVEL. CONTRACTOR SHALL PATCH IMPERFECTIONS AS REQUIRED BY CLIENT. PROTECT CONCRETE FROM PREMATURE DRYING, MAINTAIN CONCRETE WITH MINIMAL MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
ALL EXPOSED HORIZONTAL AND VERTICAL EDGES AND CORNERS SHALL HAVE 3/4" x 3/4" CHAMFERS

NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

3. REINFORCING STEEL
ALL BARS SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A615. REINFORCING BAR BENDS AND STANDARD HOOKS SHALL CONFORM TO ACI 318, LATEST EDITION. ALL BENDS SHALL BE STANDARD HOOKS UNLESS OTHERWISE SHOWN. BARS 20 FEET AND SHORTER IN LENGTH SHALL BE IN SINGLE LENGTH RUNS WITHOUT SPLICES. BARS LONGER THAN 20 FEET IN LENGTH SHALL BE SPLICED WITH 48 BAR DIAMETER LAPS (2'-0" FOR #4 BARS). SPLICES IN ADJACENT BAR RUNS SHALL BE WELL STAGGERED.

4. SPECIAL INSPECTION
PERIODIC SPECIAL INSPECTION MUST BE PERFORMED WHERE REQUIRED FOR CONCRETE EPOXY ANCHORS IN ACCORDANCE WITH SECTION 1705.1.1 OF THE 2019 CBC, WHEREBY SPECIAL INSPECTION IS DEFINED IN SECTION 202 OF THE 2019 CBC.

5. EPOXY ANCHORS
EPOXY ANCHORS SHALL BE ASTM F1554 GRADE 36 THREADED ROD WITH HILTI HIT-RE500 V3. ALL EPOXY ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS & ICC REPORT #3814. VISUAL SPECIAL INSPECTION IS REQUIRED.

SPECIAL NOTE

THE FOUNDATION MUST BE SQUARE, AND THE ANCHOR BOLTS MUST BE ACCURATELY PLACED PLUMB. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOUNDATION.

DESIGN LOADS

SCOPE: PROVIDE STRUCTURAL FOUNDATION & ANCHORAGE CALCULATIONS & DRAWINGS FOR NEW 5,000 GALLON PRESSURE TANK.

SECTION 1604.5 & TABLE 1604.5: RISK CATEGORY IV

SECTION 1606 - DEAD LOADS
5,000 GALLON PRESSURE TANK . . . . . 51.0 K

SECTION 1607 - LIVE LOADS . . . . . N/A

SECTION 1608 - SNOW LOAD . . . . . N/A

SECTION 1609 - WIND DESIGN DATA

BASIC DESIGN SPEED, V (3s GUST) . . . . . 102 MPH
NOMINAL DESIGN SPEED, $V_{ASD} = V\sqrt{0.6}$ (3s GUST) . . . . . 79 MPH
WIND EXPOSURE . . . . . B
INTERNAL PRESSURE COEFFICIENT . . . . . N/A
DESIGN WIND PRESSURE (ASCE7-16 SECTION 26.10.2), q_s . . . 15.18 PSF
DESIGN WIND LOAD (ASCE7-16 SECTION 29.4 & 29.7), F . . . . . 2.25 K

SECTION 1613 - EARTHQUAKE DESIGN DATA

LATITUDE . . . . . 37.340°
LONGITUDE . . . . . -122.086°
SITE CLASS . . . . . D
SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_s 2.297
SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_1 . . . . . 0.827
SHORT PERIOD SITE COEFFICIENT @ 0.2 SEC PERIOD, F_a 1.200
LONG PERIOD SITE COEFFICIENT @ 1.0 SEC PERIOD, F_v 1.700
MODIFIED SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_{MS} 2.757
MODIFIED SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_{M1} 1.406
DESIGN SPECTRAL RESPONSE COEFFICIENTS, S_{DS} 1.838
S_{D1} 0.937

CHAPTER 15: NON-BUILDING STRUCTURES (ASCE 7-16; SECTION 15.4.2):
SEISMIC DESIGN CATEGORY . . . . . D
BASIC SEISMIC FORCE RESISTING SYSTEM . . . . . HORIZONTAL SADDLE SUPPORTED VESSEL
SEISMIC IMPORTANCE FACTOR, I 1.50
RESPONSE MODIFICATION FACTOR, R 3.0
EQUATION 15.4-5 . . . . . $QE = .3(Sds)(I)(W) = 0.827W$
EQUATION 15.4-2 (IF S1>0.6g) . . . . . $QE = \frac{(0.8)(S1)(W)}{\left[\frac{R}{I}\right]} = 0.331W$

811 Know what's below. Call before you dig.

PEG JOB #: 20-087

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9699 Blue Larkspur Lane, Ste 104 Monterey, CA 93940
ph: (831) 333-0644

DRAWN BY:	CHECKED BY:	DATE:
A. GARCIA	A.G.	11/23/2020
DESIGNED BY:	APPROVED BY: (SIGNATURE)	DATE:
A. GARCIA		11/23/2020

REGISTERED PROFESSIONAL ENGINEER ALICIA GARCIA No. 69143 Exp. 09-30-21 11/23/2020 CIVIL STATE OF CALIFORNIA

NOT VALID WITHOUT WET SIGNATURE

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:

	DATE:	INT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE: AS NOTED

DRAWN BY:

DESIGNED BY:

TECH REVIEW: DATE:

CHECKED BY: DATE:

APPROVED BY: DATE:

TITLE: LOS ALTOS STATION 19
5,000 GALLON PRESSURE TANK
FOUNDATION PLAN & DETAILS

DISTRICT: LOS ALTOS

DATE: 11/23/2020

PROJECT ID: 00116033

DRAWING NO.: LAS-3557

SHT 1 OF 1

Pacific Engineering Group, Inc.
9699 Blue Larkspur Lane, Suite 104, Monterey, CA 93940 ph: (831) 333-0644

November 23, 2020

Structural Calculations

5,000 Gallon Pressure Tank

For

CWSC Los Altos Station 19

PEG # 20-087

Contents:

ALICIA GARCIA, P.E. for
PACIFIC ENGINEERING GROUP, INC.

REGISTERED PROFESSIONAL ENGINEER
ALICIA GARCIA
No. 87143
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JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 1 OF
CALCULATED BY AG DATE 11/12/2020
SCALE

I. 5,000 PRESSURE TANK FOUNDATION & ANCHORAGE:

BASIS OF DESIGN 2019 CBC

SPECIFICATIONS PER CLIENT

L_{TANK}	=	264 in	=	22.00 ft	(Length of Tank Shell)
Φ_{TANK}	=	72 in	=	6.00 ft	(Diameter of Tank)
h_{clr}	=	18 in	=	1.50 ft	(Clear Height of Legs)
CG_y	=	4.50 ft			(Center of Gravity)

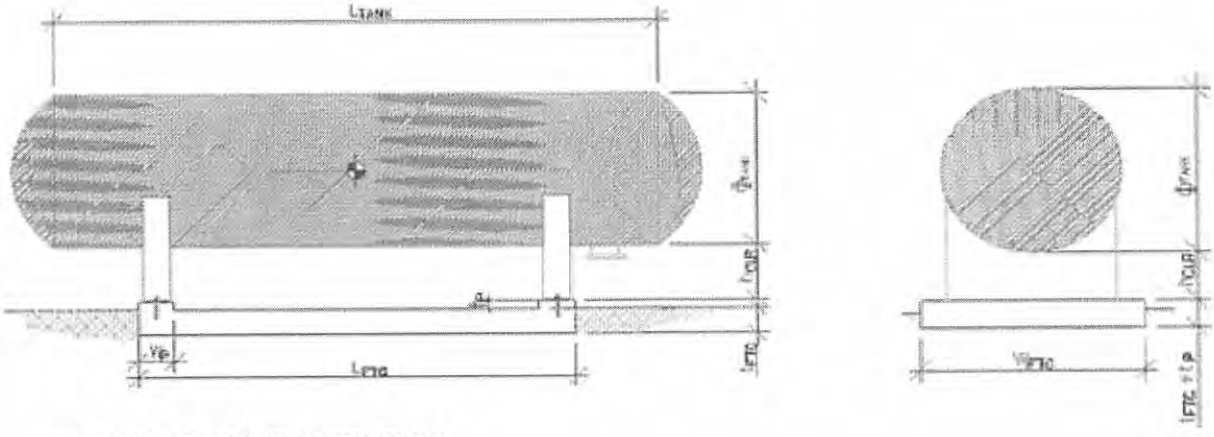
TANK EMPTY WEIGHT: Σ_{EMPTY} 8621 lbs

CONTENTS

5020 GALLONS W_{CONT}= 41893 lbs

DESIGN WEIGHT:

W_{EMPTY}	**=**	**8.621 k**	**(Empty Weight of Tank)**
W_{CONT}	=	41.893 k	(Weight of Contents)
W_{MISC}	=	0.486 k	(Misc Weight)
W_{TOT}	**=**	**51.0 k**	**(Total Weight of Tank & Contents)**



**ILLUSTRATIVE PURPOSES ONLY

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JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 2 OF
CALCULATED BY AG DATE 11/12/2020
SCALE

WIND DESIGN LOADS - OTHER STRUCTURES (2019 CBC & ASCE7-16)

ASCE7-16 §26.10.2 & Eq. 26.10-1	$q_z = 0.00256 k_z k_{zt} k_d k_e V^2$ (VELOCITY PRESSURE)				
2019 CBC Table 1604.5	RISK CATEGORY			IV	(PER SOILS REPORT)
ASCE7-16 Fig. 26.5-1(A)(B)(C)(D) & PG "A2"	ULTIMATE DESIGN WIND SPEED			102	MPH
ASCE7-16 §26.7	WIND EXPOSURE			B	
ASCE7-16 Table 26.10-1	VELOCITY PRESSURE EXPOSURE COEFFICIENT	K_z	=	0.57	
ASCE7-16 §26.8.2	TOPOGRAPHIC FACTOR	K_{zt}	=	1.00	
ASCE7-16 Table 26.6-1	WIND DIRECTIONALITY FACTOR	K_d	=	1.00	
ASCE7-16 Table 26.9-1	GROUND ELEVATION FACTOR	K_e	=	1.00	

ASCE7-10 Eq. 29.3-1 q_z = 15.18 psf

ASCE7-16 §29.4 & Eq. 29.4-1	$F = q_z G C_f A_f$ (DESIGN WIND LOAD)				
ASCE7-16 §26.11.1	GUST FACTOR	G	=	0.85	
	HEIGHT/LENGTH OF STRUCTURE	h	=	22.00	
	DIAMETER OR DEPTH OF STRUCTURE	D	=	6.00	
		h/D	=	3.67	
ASCE7-16 Fig. 29.4-1	NET FORCE COEFFICIENT	C_f	=	1.32	
	PROJECTED AREA	A_f	=	132	SF

ASCE7-16 Eq. 29.4-1 **F = 2.25 k**

ASCE7-16 §29.7 $F_{MIN} = 16 psf A_f$ = **2.11 k**

DESIGN WIND LOAD

F = 2.25 k

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JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 3 OF
CALCULATED BY AG DATE 8/27/2020
SCALE

SEISMIC (2019 CBC & ASCE7-16)

	LATTITUDE	=	37.34 °	
	LONGITUDE	=	-122.09 °	
2019 CBC Table 1604.5	OCCUPANCY CATEGORY	=	IV	SUPPORTS PUBLIC UTILITY FACILITY
ASCE7-16 §11.4.3	SITE CLASS	=	D	PER SOILS REPORT

SEISMIC GROUND MOTION VALUES - SEE APPENDIX

$S_{MS} = F_a S_s$ $S_{M1} = F_v S_1$

S_S	= 2.297	S_1 = 0.827		**SEE ASCE7-16 §11.4.8
F_a	= 1.200	F_v = 1.700		ASCE7-16 TABLE 11.4-2
S_{MS}	= 2.757 g	S_{M1} = 1.406 g		

$S_{DS} = \frac{2}{3} S_{MS}$ $S_{D1} = \frac{2}{3} S_{M1}$

2019 CBC Table 1613.2.5(1) & 1613.2.5(2)	S_{DS} = 1.838 g	S_{D1} = 0.937 g		
& ASCE7-16 Table 11.6-1 & 11.6-2	SEISMIC DESIGN CATEGORY	=	E	

SEISMIC RESPONSE COEFFICIENT FOR NON BUILDING STRUCTURE (CHAPTER 15)

ASCE7-16 Table 15.4-2	NON BUILDING STRUCTURE	=	HORIZONTAL SADDLE SUPPORTED WELDED STEEL VESSEL
ASCE7-16 Table 15.4-2	R_p (Response Mod. Factor)	=	3.00
ASCE7-16 Table 15.4-2	Ω (Over-Strength Factor)	=	2.00
ASCE7-16 §15.4.1.1 & Table 1.5-2	I (Importance Factor)	=	1.50
ASCE7-16 §12.8.2.1:	T = 0.06 s		
ASCE7-16 §15.4.2	IF $T < 0.06\,g$ THEN		
ASCE7-16 Eq. 15.4-5	$V = 0.3 S_{DS} I_e W$	=	0.827 W
ASCE7-16 §15.4.1 & Eq. 15.4-1	$C_S \geq 0.044 S_{DS} I_e \geq 0.03$	=	0.1213
	IF $S_1 \geq 0.6\,g$ THEN		
ASCE7-16 §15.4.1 & Eq. 15.4-2	$C_S \geq \frac{0.8 S_1}{\left(\frac{R}{I_e}\right)}$	=	0.331

SEISMIC BASE SHEAR

ASCE7-16 Eq. 12.8-1 $V = C_S W =$ 0.827 W

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JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 4 OF
CALCULATED BY AG DATE 11/12/2020
SCALE

WIND DESIGN (2019 CBC)

ASCE7-16 Eq. 29.4-1 $F = q_z G C_f A_f =$ 2.25 k SEE PAGE PT2 (BY INSPECTION DOES NOT GOVERN)

SEISMIC BASE SHEAR (2019 CBC)

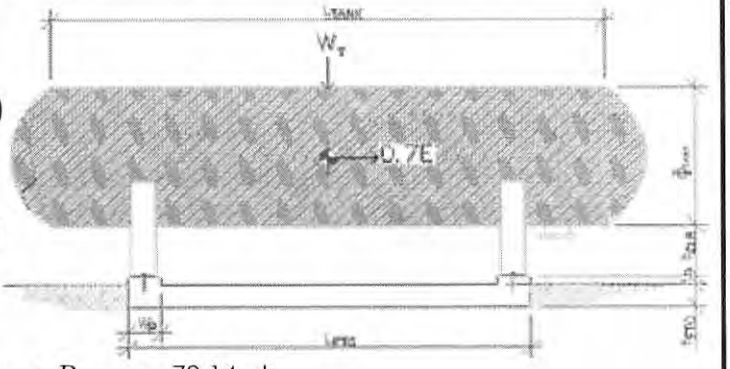
$E_h = \rho Q_E$ WHERE ρ = 1.0

$Q_E = V = C_S W =$ 0.827 W FROM PAGE PT3

Q_E	=	0.827 W	Q_E	=	42.18 k
$0.7Q_E$	=	0.579 W	$0.7Q_E$	=	29.53 k

FOUNDATION DESIGN: SOIL BEARING (ASD)

σ	=	1.5 KSF	(SOILS REPORT PROVIDED)
	x	1.333	INCREASE FOR SEISMIC & WIND
σ_{ALLOW}	=	2.00 KSF	
L_{FTG}	=	19.33 ft	
W_{FTG}	=	10.00 ft	
t_{FTG}	=	16 in	P_{FTG}=(F_{FTG} & P_{PED})
t_P	=	12 in	
W_P	=	56 in	
P_{EQ}	=	51.0 k	FROM PAGE PT1
P_{FTG}	=	52.7 k	
P_{TOT}	=	103.7 k	



Eq 1 $P_{NET} = (0.6 - 0.14 S_{DS}) P_{EQ} + P_{FTG} = 0.343 P_{EQ} + P_{FTG} =$ 70.14 k
Eq 2 $P_{NET} = (1.0 + 0.14 S_{DS}) P_{EQ} + P_{FTG} = 1.26 P_{EQ} + P_{FTG} =$ 116.78 k

$0.7Q_E$	=	29.53 k	FROM ABOVE
CG	=	4.50 ft	FROM PAGE PT1

$M_{SEIS} = 0.7 Q_E (CG + t_{FTG} + t_{PED}) =$ 201.77 kft

		Eq 1	Eq 2
$e = \frac{M_{SEIS}}{P_{TOT}}$	=	2.88 FT	1.73 FT
$x = \frac{W_{FTG}}{2} - e$	=	2.12 FT	3.27 FT
3x	=	6.37 FT	9.82 FT

IF $3x < W_{FTG}$ $\therefore q = \frac{2P}{3xL_{FTG}}$

IF $3x > W_{FTG}$ $\therefore q = \frac{P}{A} + \frac{M}{S}$

q_1 = 1.139 KSF q_2 = 1.231 KSF OK FOR SEISMIC LOADS

FOOTING IS ADEQUATE FOR SOIL BEARING

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JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 5 OF
CALCULATED BY AG DATE 11/12/2020
SCALE

FOUNDATION DESIGN: OVERTURNING (ASD)

				FT		FT		IN	
$0.7Q_E$	=	29.53 k	FROM PAGE PT3	TRY 19.33	x	10.00	x	16	SLAB (P_{FTG})
CG	=	4.50 ft	FROM PAGE PT1	4.67	x	10.00	x	12	PEDESTALS (P_{PED})
P_{TANK}	=	51.0 k	FROM PAGE PT1						
P_{FTG}	=	38.7 k	(NEGLECT THE PEDESTAL WEIGHT)						
P_{PED}	=	14.0 k							
P_{TOT}	=	103.7 K							

$$P_{NET} = (0.6 - 0.14S_{DS})P_{TANK} + P_{PED} + P_{FTG} = 0.343P_{Tank} + P_{PED} + P_{FTG} = 70.14 \text{ k}$$

$$M_{RESIST} = P_{NET}\frac{W_{FTG}}{2} = \quad 350.7 \quad \text{KFT}$$

$$M_{OT} = 0.7Q_E(CG + t_{PED} + t_{FTG}) = \quad 201.77 \text{ KFT}$$

$$F.S. = \frac{M_{RESIST}}{M_{OT}} = \quad 1.74 > 1.0 \text{ OK}$$

USE 19.33 x 10.00 x 16 " DEEP SLAB

FOOTING REINFORCMENT

$\#_{bar}$	=	5	d	=	13 in	TOP & BOTTOM, TYP.
s	=	12 in	fy	=	60 ksi	
A_s	=	0.31 in^2	f'c	=	2.5 ksi	
b	=	12 in	Φ	=	0.9	

$$a = \frac{A_s f_y}{0.85 f'_c b} = \quad 0.722 \text{ in}$$

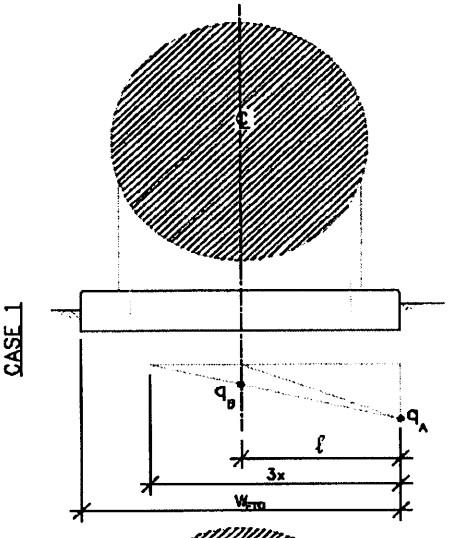
$$\phi M_n = \phi A_s f_y \left[d - \frac{a}{2}\right] = \quad 209.4 \text{ kin}$$

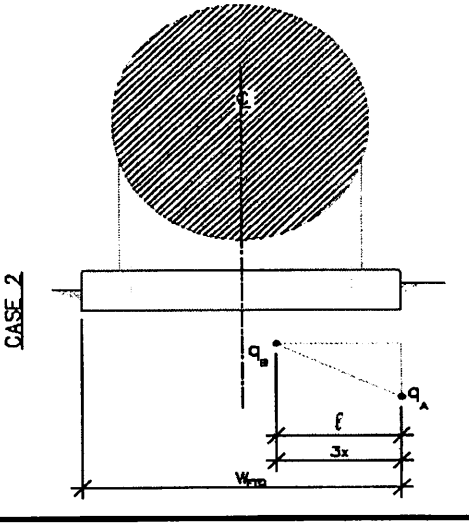
W_{FTG}	=	10.0 ft	(FROM ABOVE)
3x	=	9.82 ft	FROM PAGE PT4
l	=	5.00 ft	CASE 1
q_A	=	1.23 ksf	
q_B	=	0.26 ksf	

$$1.4M = 1.4\left(\frac{L^2}{2}\left[\frac{2}{3}q_1 + \frac{1}{3}q_2\right]\right)\frac{12"}{ft} = 190.85 \text{ kin}$$

$$M_u \le \phi M_n \quad \text{ok}$$

10.00 x 19.33 x 16 DEEP FTG
w/ # 5 BARS @ 12 " O.C. EA. WAY
TOP & BOTTOM, TYP.
f'c = 2.5 ksi (NO SPECIAL INSP REQ'D)





Pacific Engineering Group, Inc.
9699 BLUE LARKSPUR LANE, SUITE 104
MONTEREY, CA 93940
Ph: (831) 333-0644 Fax: (831) 333-0646

JOB CWSC LOS ALTOS 19 PRESSURE TANK 20-087
SHEET NO. PT 6 OF
CALCULATED BY AG DATE 11/12/2020
SCALE

ANCHORAGE:

W_T	=	40.5	k	75% FULL (FROM PAGE PT1)
Q_E	=	0.827	W	(FROM PAGE PT4)
Q_E	=	33.52	k	
CG	=	4.50	ft	(FROM PAGE PT1)
S_{DS}	=	1.838	g	(FROM PAGE PT3)
n	=	4		ANCHOR GROUPS
d'	=	42.5	in	
Φ	=	1 1/4	in	
h_{ef}	=	18.5	in	+ 10" GAGE LENGTH
N	=	2		(# Bolts in Tension)

SEE NEXT PAGE FOR ANALYSIS BASED ON
ASCE7-16 §15.4.9 &
ACI318-14 CHAPTER 17

OVERSTRENGTH NOT REQUIRED PER
ASCE7-16 §15.7.5

STRENGTH

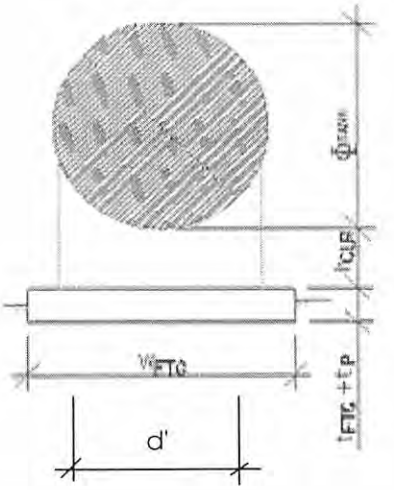
$$M_{OT} = Q_E(CG) = 150.8 \text{ kft}$$

$$\varphi = (0.9 - 0.2S_{DS})D = 0.532 \text{ D}$$

$$\varphi M_R = \varphi W_T\left(\frac{d'}{2}\right) = 38.21 \text{ kft}$$

$$N_{ua} = \frac{M_{OT} - \varphi M_R}{d'(N)} = 15.90 \text{ k}$$

$$V_{ua} = \frac{Q_E}{n} = 8.38 \text{ k}$$



USE 1 1/4 "Φ HILTI HIT-RE 500V3 (F1554 GRADE 36)
w/ 18.5 " EMBEDMENT (VISUAL SPECIAL INSP. REQ'D)

Company:	Pacific Engineering Group, Inc.	Page:	7
Specifier:	AG	Project:	CWSC Los Altos 19
Address:	9699 Blue Larkspur Lane, Suite 104, Monterey, CA 93	Sub-Project I Pos. No.:	20-087
Phone I Fax:	(831) 333-0644 | (831) 333-0645	Date:	11/12/2020
E-Mail:			

Specifier's comments: 5,000 Gallon Surge Tank Anchorage

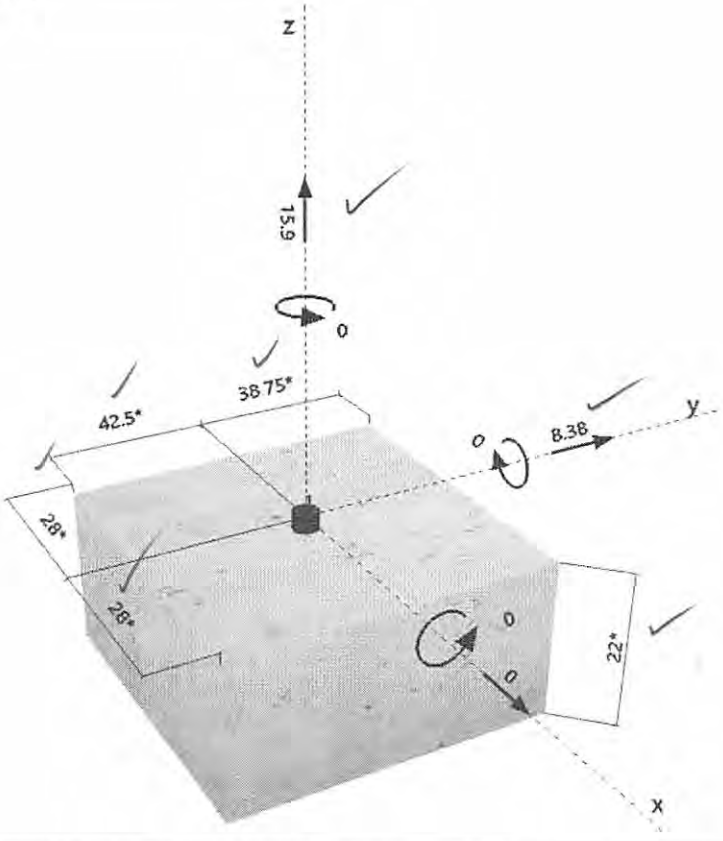
1 Input data

Anchor type and diameter:	**HIT-RE 500 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1 1/4**
Effective embedment depth:	$h_{ef,act}$ = 18.500 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM A 1554 Grade 36
Evaluation Service Report:	ESR-3814
Issued I Valid:	1/1/2017 | 1/1/2019
Proof:	Design method ACI 318-14 / Chem
Stand-off installation:	- (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 22.000 in., Temp. short/long: 130/110 °F
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition A, shear: condition A; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (a)) Shear load: yes (17.2.3.5.3 (a))

ANCHORS DESIGNED FOR DUCTILITY.

[R] - The anchor calculation is based on a rigid baseplate assumption.

Geometry [in.] & Loading [kip, ft.kip]



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E-Mail:			

2 Load case/Resulting anchor forces

Load case: Design loads

Anchor reactions [kip]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	15.900	8.380	0.000	8.380

max. concrete compressive strain:	- [‰]
max. concrete compressive stress:	- [ksi]
resulting tension force in (x/y)=(0.000/0.000):	0.000 [kip]
resulting compression force in (x/y)=(0.000/0.000):	0.000 [kip]

Anchor forces are calculated based on the assumption of a rigid baseplate.

3 Tension load

	Load N_{ua} [kip]	Capacity ϕN_n [kip]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	15.900	42.158	38	OK
Bond Strength**	15.900	41.792	39	OK
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Strength**	15.900	38.045	42	OK

* anchor having the highest loading **anchor group (anchors in tension)

3.1 Steel Strength

N_{sa} = ESR value	refer to ICC-ES ESR-3814
$\phi N_{sa} \geq N_{ua}$	ACI 318-14 Table 17.3.1.1

PER ACI 318-14 SECTION 17.2.3.4.3(a) $1.2N_{sa} < N_a$ ÷ N_{cs}

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [ksi]
0.97	58

Calculations

N_{sa} [kip]
56.210

Results

N_{sa} [kip]	ϕ_{steel}	ϕN_{sa} [kip]		N_{ua} [kip]
56.210	0.750	42.158	>	15.900

$1.2N_{sa} = 1.2(36.21\,k) = 67.452\,k$

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Phone I Fax:	(831) 333-0644 | (831) 333-0645	Date:	11/12/2020
E-Mail:			

3.2 Bond Strength

$N_a = \left(\frac{A_{Na}}{A_{Na0}}\right) \psi_{ed,Na} \psi_{cp,Na} N_{ba}$ — ACI 318-14 Eq. (17.4.5.1a)

$\phi N_a \geq N_{ua}$ — ACI 318-14 Table 17.3.1.1

A_{Na} = see ACI 318-14, Section 17.4.5.1, Fig. R 17.4.5.1(b)

$A_{Na0} = (2 c_{Na})^2$ — ACI 318-14 Eq. (17.4.5.1c)

$c_{Na} = 10 d_a \sqrt{\frac{\tau_{uncr}}{1100}}$ — ACI 318-14 Eq. (17.4.5.1d)

$\psi_{ec,Na} = \left(\frac{1}{1 + \frac{e_N}{c_{Na}}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.5.3)

$\psi_{ed,Na} = 0.7 + 0.3 \left(\frac{c_{a,min}}{c_{Na}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.5.4b)

$\psi_{cp,Na} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{c_{Na}}{c_{ac}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.5.5b)

$N_{ba} = \lambda_a \cdot \tau_{k,c} \cdot \alpha_{N,seis} \cdot \pi \cdot d_a \cdot h_{ef}$ — ACI 318-14 Eq. (17.4.5.2)

Variables

$\tau_{k,c,uncr}$ [ksi]	d_a [in.]	h_{ef} [in.]	$c_{a,min}$ [in.]	$\tau_{k,c}$ [ksi]
2	1.250	18.500	28.000	1

$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	c_{ac} [in.]	λ_a	$\alpha_{N,seis}$
0.000	0.000	44.099	1.000	1.000

Calculations

c_{Na} [in.]	A_{Na} [in.^{2}]	A_{Na0} [in.^{2}]	$\psi_{ed,Na}$
15.874	1,007.88	1,007.88	1.000

$\psi_{ec1,Na}$	$\psi_{ec2,Na}$	$\psi_{cp,Na}$	N_{ba} [kip]
1.000	1.000	1.000	85.726

Results

N_a [kip]	ϕ_{bond}	$\phi_{seismic}$	ϕN_a [kip]		N_{ua} [kip]
85.726	0.650	0.750	41.792	>	15.900

$1.2 N_{sa} = 67.452^k < N_a = 85.726^k$ (OK)

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E-Mail:			

3.3 Concrete Breakout Strength

$N_{cb} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ — ACI 318-14 Eq. (17.4.2.1a)

$\phi N_{cb} \geq N_{ua}$ — ACI 318-14 Table 17.3.1.1

A_{Nc} see ACI 318-14, Section 17.4.2.1, Fig. R 17.4.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ — ACI 318-14 Eq. (17.4.2.1c)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N'}{3 h_{ef}}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.2.4)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.2.5b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.4.2.7b)

$N_b = k_c \lambda_a \sqrt{f_c'} h_{ef}^{1.5}$ — ACI 318-14 Eq. (17.4.2.2a)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
18.500	0.000	0.000	28.000	1.000

c_{ac} [in.]	k_c	λ_a	f_c' [psi]
44.099	17	1.000	2,500

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
3,080.25	3,080.25	1.000	1.000	1.000	1.000	67.636

Results

N_{cb} [kip]	$\phi_{concrete}$	$\phi_{seismic}$	ϕN_{cb} [kip]		N_{ua} [kip]
67.636	0.750	0.750	38.045	>	15.900

$1.2 N_{sa} = 67.452^k < N_{cb} = 67.636^k$ (ok)

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E-Mail:			

4 Shear load

	Load V_{ua} [kip]	Capacity ϕV_n [kip]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	8.380	13.153	64	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Concrete Breakout Strength controls)**	8.380	94.690	9	OK
Concrete edge failure in direction y+**	8.380	24.127	35	OK

* anchor having the highest loading **anchor group (relevant anchors)

4.1 Steel Strength

$V_{sa,eq}$ = ESR value refer to ICC-ES ESR-3814

$\phi\ V_{steel} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [ksi]
0.97	58

Calculations

$V_{sa,eq}$ [kip]
20.235

Results

$V_{sa,eq}$ [kip]	ϕ_{steel}	$\phi\ V_{sa}$ [kip]		V_{ua} [kip]
20.235	0.650	13.153	>	8.380

4.2 Pryout Strength (Concrete Breakout Strength controls)

$V_{cp} = k_{cp}\left[\left(\frac{A_{Nc}}{A_{Nc0}}\right)\psi_{ed,N}\,\psi_{c,N}\,\psi_{cp,N}\,N_b\right]$ ACI 318-14 Eq. (17.5.3.1a)

$\phi\ V_{cp} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

A_{Nc} see ACI 318-14, Section 17.4.2.1, Fig. R 17.4.2.1(b)

$A_{Nc0} = 9\,h_{ef}^2$ ACI 318-14 Eq. (17.4.2.1c)

$\psi_{ec,N} = \left(\frac{1}{1+\frac{2\,e'_N}{3\,h_{ef}}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.2.4)

$\psi_{ed,N} = 0.7 + 0.3\left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.2.5b)

$\psi_{cp,N} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.2.7b)

$N_b = k_c\,\lambda_a\sqrt{f'_c}\,h_{ef}^{1.5}$ ACI 318-14 Eq. (17.4.2.2a)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	18.500	0.000	0.000	28.000

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	44.099	17	1.000	2,500

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
3,080.25	3,080.25	1.000	1.000	1.000	1.000	67.636

Results

V_{cp} [kip]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	$\phi\ V_{cp}$ [kip]		V_{ua} [kip]
135.272	0.700	1.000	1.000	94.690	>	8.380

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E-Mail:			

4.3 Concrete edge failure in direction y+

$V_{cb} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ — ACI 318-14 Eq. (17.5.2.1a)

$\phi V_{cb} \geq V_{ua}$ — ACI 318-14 Table 17.3.1.1

A_{Vc} see ACI 318-14, Section 17.5.2.1, Fig. R 17.5.2.1(b)

$A_{Vc0} = 4.5 c_{a1}^2$ — ACI 318-14 Eq. (17.5.2.1c)

$\psi_{ec,V} = \left(\frac{1}{1 + \frac{2e_v}{3c_{a1}}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.5.2.5)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.5.2.6b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ — ACI 318-14 Eq. (17.5.2.8)

$V_b = 9 \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ — ACI 318-14 Eq. (17.5.2.2b)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
18.667	28.000	0.000	1.000	22.000

l_e [in.]	λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
10.000	1.000	1.250	2,500	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [kip]
1,232.00	1,568.00	1.000	1.000	1.128	36.292

Results

V_{cb} [kip]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	ϕV_{cb} [kip]	V_{ua} [kip]
32.170	0.750	1.000	1.000	24.127	8.380

5 Combined tension and shear loads

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.418	0.637	5/3	71	OK

$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} <= 1$

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E-Mail:			

6 Warnings

- The anchor design methods in PROFIS Anchor require rigid anchor plates per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Anchor calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid base plate assumption is valid is not carried out by PROFIS Anchor. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to your local standard.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI 318 or the relevant standard!
- An anchor design approach for structures assigned to Seismic Design Category C, D, E or F is given in ACI 318-14, Chapter 17, Section 17.2.3.4.3 (a) that requires the governing design strength of an anchor or group of anchors be limited by ductile steel failure. If this is NOT the case, the connection design (tension) shall satisfy the provisions of Section 17.2.3.4.3 (b), Section 17.2.3.4.3 (c), or Section 17.2.3.4.3 (d). The connection design (shear) shall satisfy the provisions of Section 17.2.3.5.3 (a), Section 17.2.3.5.3 (b), or Section 17.2.3.5.3 (c).
- Section 17.2.3.4.3 (b) / Section 17.2.3.5.3 (a) require the attachment the anchors are connecting to the structure be designed to undergo ductile yielding at a load level corresponding to anchor forces no greater than the controlling design strength. Section 17.2.3.4.3 (c) / Section 17.2.3.5.3 (b) waive the ductility requirements and require the anchors to be designed for the maximum tension / shear that can be transmitted to the anchors by a non-yielding attachment. Section 17.2.3.4.3 (d) / Section 17.2.3.5.3 (c) waive the ductility requirements and require the design strength of the anchors to equal or exceed the maximum tension / shear obtained from design load combinations that include E, with E increased by ω_0.
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-14, Section 17.8.1.

Fastening meets the design criteria!

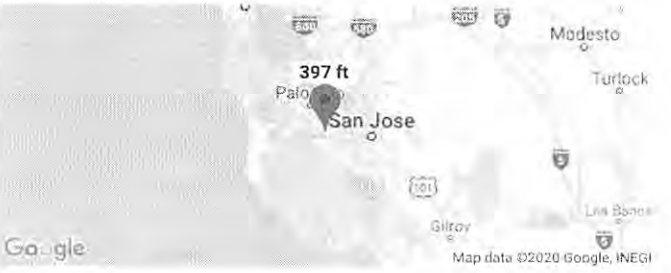
USE 1¼" Ø ASTM F1554 (GR36) ANCHOR RODS W/ HILTI HIT RE 500(V3) GROUT EMBED 25" INTO 28" CONC. SLAB & PEDESTAL. (18½" BOND LENGTH & 10" GAGE LENGTH), TYP.

ATC Hazards by Location

A1

Search Information

Coordinates:	37.339675, -122.086008
Elevation:	397 ft
Timestamp:	2020-08-28T00:28:14.101Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	IV
Site Class:	D-default



Basic Parameters

Name	Value	Description
S_S	2.297	MCE_R ground motion (period=0.2s)
S_1	0.827	MCE_R ground motion (period=1.0s)
S_{MS}	2.757	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.838	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.906	Coefficient of risk (0.2s)
CR_1	0.893	Coefficient of risk (1.0s)
PGA	0.95	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.14	Site modified peak ground acceleration
T_L	12	Long-period transition period (s)
SsRT	2.303	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.541	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.297	Factored deterministic acceleration value (0.2s)
S1RT	0.926	Probabilistic risk-targeted ground motion (1.0s)
S1UH	1.038	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.827	Factored deterministic acceleration value (1.0s)
PGAd	0.95	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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ATC Hazards by Location

A2

Search Information

Coordinates: 37.339675, -122.086008

Elevation: 397 ft

Timestamp: 2020-08-28T00:27:12.151Z

Hazard Type: Wind

ASCE 7-16		ASCE 7-10		ASCE 7-05	
MRI 10-Year	63 mph	MRI 10-Year	72 mph	ASCE 7-05 Wind Speed	85 mph
MRI 25-Year	70 mph	MRI 25-Year	79 mph		
MRI 50-Year	74 mph	MRI 50-Year	85 mph		
MRI 100-Year	78 mph	MRI 100-Year	91 mph		
Risk Category I	86 mph	Risk Category I	100 mph		
Risk Category II	91 mph	Risk Category II	110 mph		
Risk Category III	98 mph	Risk Category III-IV	115 mph		
Risk Category IV	102 mph				

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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GENERAL INFORMATION

		VESSEL EXTERIOR	VESSEL INTERIOR
SURFACE FINISH	SANDBLAST	SEE SPECIAL INSTRUCTIONS	SEE SPECIAL INSTRUCTIONS
	PRIMER		
	MILS COAT		
	TOTAL D.F.T.		
	PAINT		
	MILS COAT		
	TOTAL D.F.T.		
	COLOR	-	-

MISCELLANEOUS				
	ESTIMATED EMPTY WEIGHT	lbs. 8,621	APPROX. CAPACITY	GAL. 5,020
	EST. WT. FULL OF WATER	lbs. 50,514		
	INSULATION	NONE		
	REFERENCE DRAWINGS	DWG NO.: CWT456-R21		
	CUSTOMER STANDARDS	NONE		
	SHIPPING FOOTPRINT	(LxWxH) 27'-3", 6'-1", 8'-0"		

DESIGN CODE		HOLD POINTS
	ASME CODE SECTION VIII	1. -
	DIVISION 1, 2019 EDITION	2.
	-	3.
	CODE SYMBOL REQUIRED	4.
	-	

ADDITIONAL DESIGN CONDITIONS

RADIOGRAPHY:			
LONG SEAMS	SPOT UW-11(b)	JOINT EFFICIENCY	85%
CIRCUMFERENTIAL SEAMS:			
HEAD-SHELL:	SPOT UW-11(a)(5)(b)	JOINT EFFICIENCY	70%
INTERMEDIATES:	NONE UW-11(c)	JOINT EFFICIENCY	70%
STRESS RELIEVE	NOT REQUIRED	IMPACT TESTING NOT REQUIRED	
SPECIFIC GRAVITY	1		
SEISMIC ZONE	ASCE 7-16, GROUND SUPPORTED	IMPORTANCE FACTOR	1.5
CORROSION ALLOWANCE	NONE		
-			
HYDRO TEST	195 PSI	TESTED IN THE HORIZONTAL POSITION	

U
RT-4

CERTIFIED BY
Modern Custom Fabrication, Inc.
FRESNO, CA

MAWP	150	PSIG AT	150	°F	
MDMT	20	°F AT	150	PSIG	
MFG'S S/N	30401	YEAR	2020		

HEAD THK. .318" MIN. SHELL THK. .375" NOM.
APPROX. CAP. 5,020 GAL., APPROX. EMPTY WT. 9,358 LBS.
SURFACE AREA 632 SQ.FT.
HYDRO TEST 195 PSIG

STANDARD STAINLESS STEEL NAMEPLATE

SPECIAL INSPECTIONS AND INSTRUCTIONS

1. INTERIOR LINING SYSTEM:
   A. SURFACE PREPARATION SPECIFICATIONS: ABRASIVE BLAST CLEAN PER SSPC-SP5.
   B. APPLICATION: APPLY MULTIPLE (2) TWO COATS OF CARBOLINE CO. "PLASITE" 4500S NSF EPOXY COATING, TO ACHIEVE A 30-40 MIL DFT SYSTEM. FOLLOW MANUFACTURER'S RECOMMENDATIONS AND "NSF" GUIDELINES FOR THINNING, MIXING, RECOATING TIME, CURING, AND PINHOLE & HOLIDAY TESTING (507 SQ.FT.).

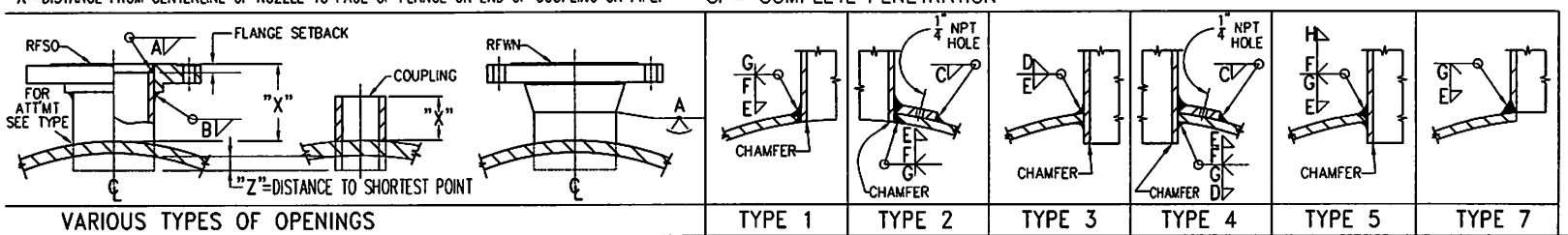
2. EXTERIOR COATING SYSTEM:
   A. SURFACE PREPARATION SPECIFICATIONS: ABRASIVE BLAST CLEAN PER SSPC-SP10, ANCHOR PATTERN 1.5-2.5 MILS.
   B. PRIME COAT: APPLY ONE 3-5 MILS DFT COAT OF CARBOZINC 859. STRIPE COAT ALL WELDS AND CREVICES PRIOR TO INTERMEDIATE COAT APPLICATION.
   C. INTERMEDIATE COAT: APPLY ONE 4-6 MILS DFT COAT OF CARBOGUARD 890.
   D. FINISH COAT: APPLY ONE 3-5 MILS DFT COAT OF CARBOTHANE 134 COLOR GROUSE TAN GLOSS. TOTAL SYSTEM 10-16 MILS DFT (637 SQ.FT.).

3. A NAMEPLATE WILL BE INCLUDED ON THE TANK WITH THE FOLLOWING INFORMATION: MANUFACTURER'S NAME AND LOCATION, ASME "U" STAMP, MAXIMUM ALLOWABLE WORKING PRESSURE AT A SPECIFIED TEMPERATURE, MINIMUM DESIGN METAL TEMPERATURE AT 150 PSI, MANUFACTURER'S SERIAL NUMBER, YEAR BUILT, CAPACITY IN GALLONS, HEAD THICKNESS IN INCHES, SHELL THICKNESS IN INCHES, APPROXIMATE EMPTY WEIGHT IN POUNDS, AND SURFACE AREA IN SQUARE FEET.

4. TO INSURE FIT, SHOP SHALL ASSEMBLE STILLING WELL AND USE AS A TEMPLATE TO LAYOUT PIPE NIPPLES IN HEAD.

5. THIRD PARTY INSPECTION: DIMENSIONAL-POST FABRICATION, COATING MATERIALS-PRE-COATING/ WITNESS, AND COATING THICKNESS-POST COATING.

"X"=DISTANCE FROM CENTERLINE OF NOZZLE TO FACE OF FLANGE OR END OF COUPLING OR PIPE. CP= COMPLETE PENETRATION



VARIOUS TYPES OF OPENINGS

NOZZLE MARK	QUANT. REQ'D.	SIZE	SERIES	DESCRIPTION	NOZZLE NECK DESCRIPTION	NOZZLE NECK THK.	REINF. PAD WIDTH	TYPE	COPED TO INTERIOR	DIM "X"	DIM "Z"	WELD A	WELD B	WELD C	WELD D	WELD E	WELD F	WELD G	WELD H	FLANGE SET BACK	NOZZLE SERVICE
		FLANGE OR COUPLING			NOZZLE NECK	REINF. PAD		ATTACHMENTS													
M	1	18"X24"	ELLIPTICAL	MANWAY	SA-675-70	1/2"	3"	4	NO	CNTRD	BAL	-	-	5/16"	3/8"	3/8"	1/2"	0"	-	-	ACCESS
K	1	2"	CL3000	HALF COUPLING	SA182-F304	-	-	1	YES	BAL.	0"	-	-	-	-	5/16"	0"	1/4"	-	-	MISC.
J	1	2"	CL3000	HALF COUPLING	SA182-F304	-	-	1	NO	BAL.	0"	-	-	-	-	5/16"	0"	1/4"	-	-	MISC.
I2	1	2"	-	T.O.E. PIPE	SCH 40S	-	-	1	YES	SEE DWG.	0"	-	-	-	-	1/4"	0"	3/16"	-	-	LOWER STILLING WELL
I1	1	2"	-	T.O.E. PIPE	SCH 40S	-	-	1	YES	SEE DWG.	0"	-	-	-	-	1/4"	0"	3/16"	-	-	UPPER STILLING WELL
H	1	8"	CL150	RFWN	SCH 40 (STD)	5/16"	2"	2	YES	SEE DWG.	0"	CP	-	1/4"	-	5/16"	1/4"	1/4"	-	-	INLET/ OUTLET
E2	1	1/2"	CL6000	PIPE W/ HALF COUPLING	SCH. 40S	-	-	1	YES	SEE DWG.	0"	-	-	-	-	3/16"	0"	3/16"	-	-	LOWER SIGHT GLASS
E1	1	1/2"	CL6000	FULL COUPLING	SA182-F304	-	-	1	NO	BAL.	0"	-	-	-	-	3/8"	0"	1/4"	-	-	UPPER SIGHT GLASS
D2	1	3/4"	CL6000	FULL COUPLING	SA182-F304	-	-	1	YES	BAL.	0"	-	-	-	-	3/8"	0"	3/8"	-	-	LOWER OUTLET
D1	1	3/4"	CL6000	PIPE W/HALF COUPLING	SCH. 40S	-	-	1	YES	SEE DWG.	0"	-	-	-	-	3/16"	0"	3/16"	-	-	UPPER OUTLET

WELD PROCEDURES	
A	1.01
B	3.07
C	3.06
D	3.04
E	4.11
F	4.57
G	5.03
H	-
-	-

SHOP NOTES
1. COVER ALL OPENINGS BEFORE SHIPPING.
2. STRADDLE CENTER LINES OF ALL FLANGES UNLESS OTHERWISE SPECIFIED.
3. GRIND & DEBURR ALL EDGES.

NO.	REVISION	DATE	BY
	-	-	-
A	-	-	-

NO. REQUIRED (1) ONE ITEM NO. NONE

modern custom fabrication
fresno california
4822 E. Jensen Ave. Fresno, California 93725
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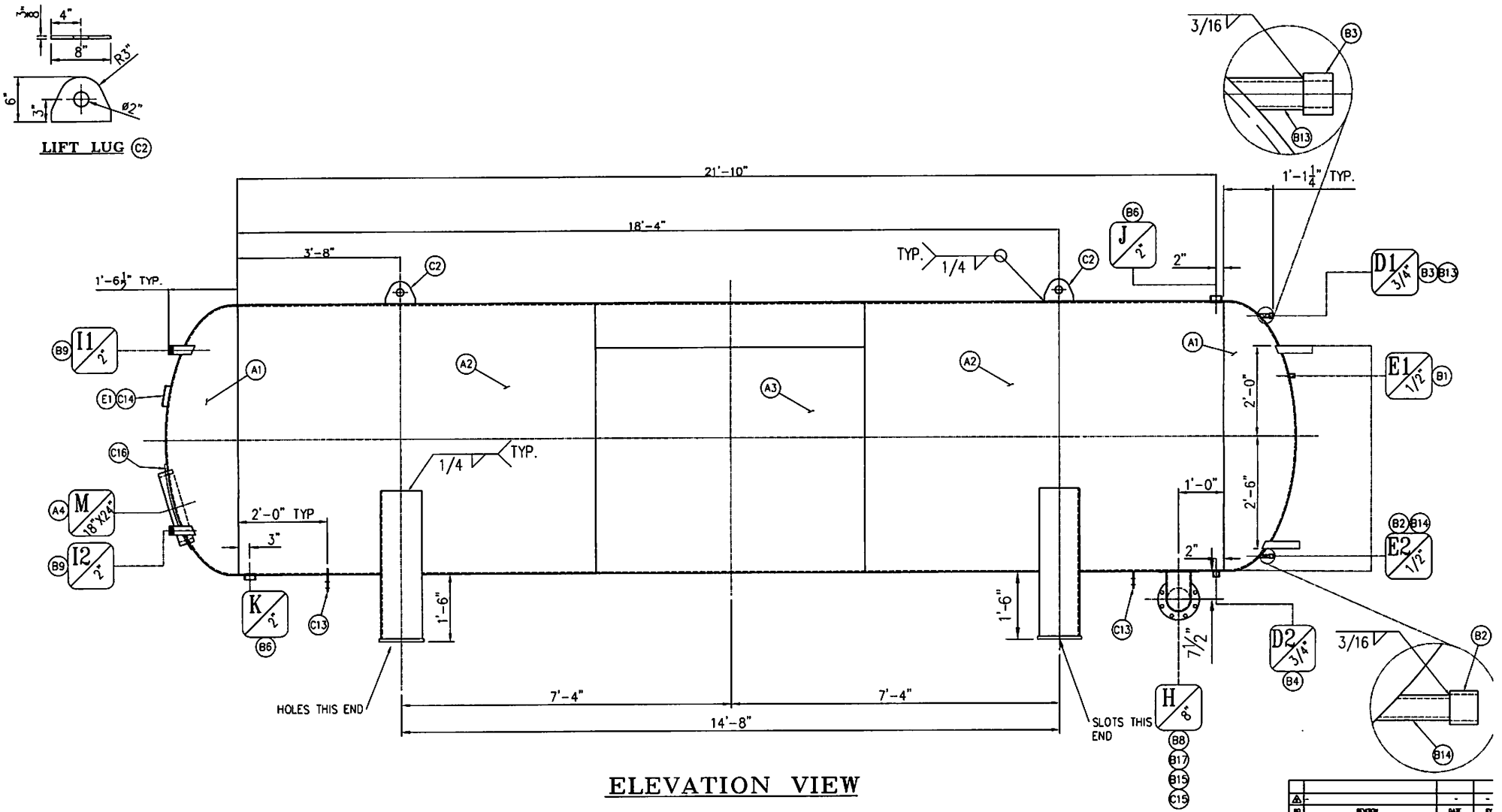
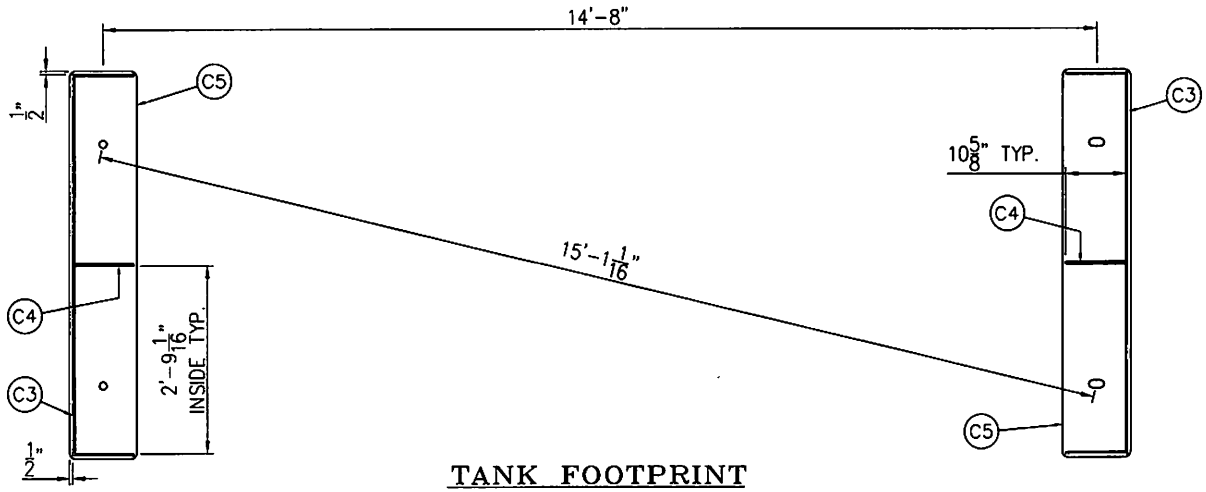
Prepared for
CALIFORNIA WATER SERVICES
72' O.D. X 22'-0" S/S HORIZONTAL HYDRO TANK
LOS ALTOS STATION 19

DRAWN BY: RC	SCALE: NTS
CHECKED BY:	DATE: 10/30/20
DWG/JOB NO.: 30401	SHT. 1 OF

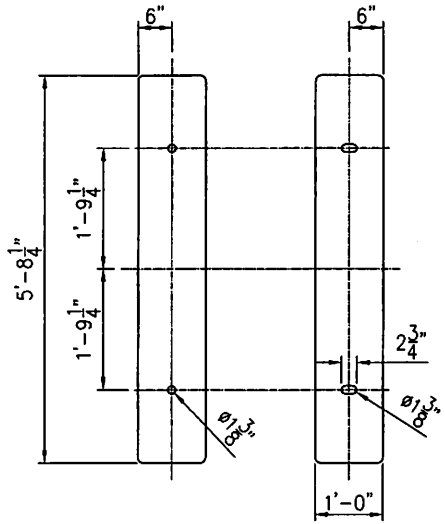
A3


LIFT LUG C2
4"
8"
R3"
6"
3"
Ø2"
21'-10"
18'-4"
3'-8"
1'-6½" TYP.
1'-1¼" TYP.
2'-0" TYP
3"
1/4 TYP.
2"
2'-0"
2'-6"
1'-0"
1'-6"
7½"
7'-4"
7'-4"
14'-8"
HOLES THIS END
SLOTS THIS END
3/16
ELEVATION VIEW
modern custom fabrication
fresno california
CALIFORNIA WATER SERVICES
72" O.D. X 22'-0" S/S HORIZONTAL HYDRO TAN
LOS ALTOS STATION 19
DRAWN BY: RC
SCALE: NTS
CHECKED BY:
DATE: 10/30/20
SHT. 2 OF

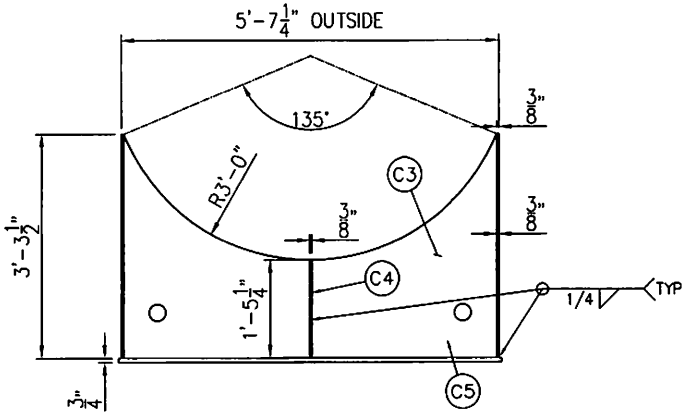
A4



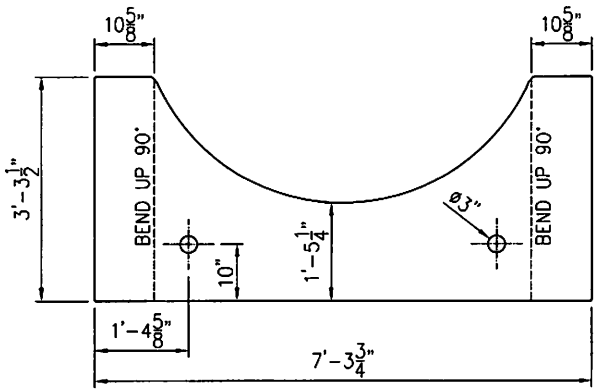
TANK FOOTPRINT



BASE PLATE DETAIL (C5)



SADDLE DETAIL



WEB PLATE DETAIL (C3)

1	-	-	-
NO.	REVISION	DATE	BY
NO. REQUIRED (1) ONE	ITEM NO. NONE		

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DWG/JOB NO. 30401	SHT. 5 OF

A5